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ABSTRACT

This report examines variations in school and classroom attributes that were associated with improved student achievement outcomes. Of particular interest were those attributes of Chapter 1 and regular school programs that contributed to improved outcomes for educationally at-risk students. A secondary focus was to measure the relationships between academic achievement and various student background attributes, particularly, Chapter 1 participation in math and reading services. The study analyzed data from "Prospects: The Congessionally Mandated Study of Educational Growth and Opportunity," a 6-year longitudinal evaluation of the impact of the Chapter 1 program. The Comprehensive Test of Basic Skills reading and math vertical scale scores were used to fit each student's academic growth trajectory over three testing points--spring 1991 through spring 1993. Hierarchical Linear Models (HLMs) were used to model individual student growth trajectories for 1991-93, school-specific effects on the growth trajectories, and the consequences of variations in school attributes for the school effects. Overall, the results supported some features of the effective-schools model and the idealized school-level attributes advocated by proponents of systemic reform. However, the data did not support the assertion that a focus on student-centered, advanced-skills instruction would improve Chapter 1 students' learning. Second, schoolwide alignment and coordination of Chapter 1 and the regular program was related to increased educational growth. Third, greater school-level decision-making autonomy alone did not influence longitudinal achievement. However, in some cases, schools that integrated collaborative principal-teacher leadership with a clear mission shared by all staff were more likely to contain students with improved learning rates. Policy for high-poverty schools should therefore incorporate: (1) strong collaborative leadership provided by both principals and teachers; (2) a longer academic year; (3) instruction for at-risk students that focuses on the basics through a teacher-directed approach; and (4) collaboration between Chapter 1 and regular staff. Forty-nine tables and appendices containing statistical data are included. (LMI)

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Prospects: Special Analyses

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Executive Summary

The analyses detailed in this report made use of the *Prospects* data to discover the variations in student, school, and classroom attributes that are associated with improved achievement outcomes, especially the achievements of at-risk students who participated in federal Chapter 1 (now Title I) math and reading/English/language arts (R/E/LA) services. Rather than generating nationally-representative descriptive data concerning individual student characteristics, the main purpose of the analyses was to explore school and classroom attributes that mediate at-risk students' math and reading achievement outcomes. The analysis plan was guided by current educational research and inspired by the model for school improvement suggested by systemic reform, which grew out of empirical models of "effective schools" for disadvantaged students. These models of educational excellence emphasize key school-level structural and organizational attributes of effective schools, such as autonomous school-site management, strong leadership by principals and/or teachers, and collaborative planning among school staff, but they do not define the academic content and instructional activities that are essential for maximizing the achievement of at-risk students. The literature on effective curriculum and instructional practices for at-risk students was reviewed in order to develop a comprehensive analysis plan. This body of research indicated that conventional practices that focused on student basic-skill mastery were not as effective as instruction that emphasized meaning and understanding, and a curricular approach that integrated basic skills with challenging, real-life content. Thus, it was hypothesized that schools characterized by the features of the systemic reform and effective schools models, and that offered alternative forms of curriculum and instruction would facilitate student learning.

The Comprehensive Test of Basic Skills (CTBS/4) reading and math vertical scale scores were used to fit each student's academic growth trajectory over the three testing points, spring 1991 (the baseline achievement tests were administered to Cohort 1 students during the fall of 1991) through spring 1993. Variation among student growth trajectories was modeled using three general types of attributes: student background attributes; instructional attributes; and school attributes. The developed factors and single-item variables that defined these attributes were gleaned from various *Prospects* survey data files and from the Survey Control File. Many school and instructional factors and variables that were developed correspond to the elements of effective schools that serve at-risk students. Additional variables were developed to model key differences among student backgrounds [e.g., socioeconomic status (SES), gender, and race], basic school compositional attributes (e.g., urbanicity, size, and racial distributions), and teacher background characteristics (e.g., highest degree earned, certification credentials, and years teaching).

We used hierarchical linear models (HLMs) to model individual student growth trajectories (1991-1993), school-specific effects on these growth trajectories, and the consequences of variations in school attributes for the school effects. The models were specified separately by cohort (1, 3, and 7) and by subject (math and R/E/LA). Two-level analyses permitted modeling of variation in student-specific growth trajectories as a consequence of student characteristics and instructional attributes. Three-level HLMs modeled

the variation of student-specific growth trajectories within schools and permitted analyses of achievement differences as a consequence of the school attributes. Therefore, there were three main series of analyses.

As stated previously, the main purpose of the analyses was to explore school and classroom attributes that may influence at-risk students' math and reading achievement outcomes. Therefore, the selection of school and student samples was consistent with this objective. It was not possible to include all students from the core sample in any of the three types of HLM models. Also, each type of model was based on different sub-samples of the core group of students. Efforts were made to retain as many students as possible by performing certain data imputation procedures, but many students were missing values on key variables which forced their removal from the analytical samples. Because the instructional effects analyses were designed to reveal the influence of various regular classroom and Chapter 1 program instructional attributes, only Chapter 1 participants were included in these samples. Only 1992 and 1993 data from the Chapter 1 and regular teachers were considered in these analyses, because our models treated instructional effects as interventions occurring after the pretest was administered in 1991. Due to missing student and school data, it was not possible to perform three-level analyses that focused specifically on either the impact of school effects on the within-school Chapter 1 effects or on the between school Chapter 1 effects. However, there were adequate numbers of Cohort 1 and 3 high-poverty (i.e., over 50 percent poverty rate) Chapter 1 schools that contained sufficient numbers of Chapter 1 and non-Chapter 1 students to perform three-level analyses. Thus, our school effects models assessed the impact of the various school-level attributes on the growth rates of both Chapter 1 and non-Chapter 1 students in high-poverty schools.

During our efforts to perform the analyses, two major data problems emerged that complicated the analyses and stalled our progress. First, the data files did not contain analytical longitudinal or cross-sectional student weights. The only student weights available in the *Prospects* data files were basic design weights, which were not adjusted for non-response. Because the sampling strata were not identified in the *Prospects* data files, and because construction of sample weights was beyond the scope of this project, we did not attempt to adjust the available design weights. Weighting of schools posed other problems. Specifically, because current HLM programs do not offer three-level weighting options, and because our samples of schools and students for the three-level analyses were quite selective, use of the available baseline student and school weights was not possible, nor was it necessarily appropriate, for the three-level analyses. Likewise, student weights were not used for the instructional effects analyses, due to unusually small and nonrepresentative samples. Second, missing data may have produced non-response bias. As mentioned, efforts to minimize missing data were exerted, but the potential extent of this bias and its possible impact on the final results of the analyses could not be ascertained. Nonetheless, the *Prospects* data set is a valuable resource for quantitative educational research, and it was possible to complete most of our projected analyses.

The results of the two-level student analyses indicated that the associations of the various predictors with initial status and growth varied depending on the particular subject and grade cohort considered. Certain variables, however, maintained consistent relationships to both math and reading achievement across cohorts. Perhaps most disconcerting was the academic growth of American Indians, who in five of six models began at the same pretest level as Caucasians but grew at a significantly lesser pace (the one exception being the Cohort 3 students in math). Gender effects on the intercepts and slopes were rather modest and inconsistent. The most pronounced effect regarding the urbanicity of the student's school was found for rural students. In comparison to urban students, Cohort 1 rural students entered first grade at higher reading and math achievement levels, but grew at significantly slower rates in both subjects. No differences were found for Cohort 3, whereas Cohort 7 rural students grew at a faster rate than their urban counterparts. The relationships between SES and achievement were consistent and in the expected direction. The most dramatic associations were found for Cohort 1. For both reading and math, the SES coefficients for the reading and math intercepts and slopes were positive and significant.

We attempted to model a variety of student affective measures as predictors of initial status and achievement growth. The teacher-reported student engagement measure was clearly the most important student-level predictor of achievement. Students scoring higher on this factor had significantly higher math and reading pretest scores across all three cohorts, and in all but one case the factor was significantly and positively associated with student learning rates. The only consistent effects for the student self-reported factors were found for the subject-specific self-efficacy measures.

We operationalized participation in federal Chapter 1 math and R/E/LA programs in two ways: (1) yearly subject-specific participation, regardless of participation status during the other years, and; (2) the three-year pattern of subject-specific participation (e.g., received Chapter 1 in year 1, did not receive Chapter 1 in year 2, received Chapter 1 in year 3). Because these services are targeted toward low-achievers, generally yearly Chapter 1 participation was associated with a lower pretest measure. Regarding longitudinal growth, there were no systematic and consistent relationships between Chapter 1 participation and learning. However, when considering the yearly participation variables, there was a tendency for the middle year (1992) participation indicator to be positively correlated with reading and math growth. The participation pattern indicators revealed that the more advantageous patterns tended to be those where students received Chapter 1 services in years 1 and/or 2 but not in year 3. This relationship was especially pronounced for Cohort 1. Finally, those students participating in all three years had a propensity to learn at a significantly slower rate. However, the reader should note that student sample sizes for some participation patterns were rather small.

Few instructional variables had significant and consistent associations with student learning. The one most reliable finding was that the Teacher-led, Basic-skills Oriented Approach, for both Chapter 1 and regular instruction, was significantly and positively related to academic gains, especially for Cohort 1 and 3. The two Student-centered, Advanced-skills

Oriented Approach variables were not positively and significantly related to improved academic growth in any case. However, this is not to say that this type of instructional approach does not contribute to improved student learning. In fact, the largest positive reading coefficient for the instructional analyses was found for the situation in which the regular Cohort 1 teachers emphasized student-centered, advanced skills activities and the Chapter 1 teachers emphasized a teacher-led, basic-skills instructional approach.

The school structural and organizational attributes that supported improved rates of student learning tended to be global indicators, rather than specific factors considered independently. These global variables may more accurately reflect the true interdependence among various school-level attributes. This may indicate that high-poverty schools attempting to improve student achievement should not emphasize change of discrete aspects of their structures and organizations, but rather need to view school improvement in a wholistic manner. The promising findings for the global coordination of Chapter 1 with the Regular School Program factor indicated that schools also should consider the wholistic effects of the total educational program. When supplemental Chapter 1 services were more aligned and integrated with the regular school program, all students within these schools responded with accelerated growth rates.

Overall, the results of this study supported some features of the effective schools model and the idealized school-level attributes advocated by proponents of systemic reform. In other cases though, especially when one considers the instructional-level attributes, contrary results emerged. First, the contention that a focus on student-centered, advanced-skills instruction as a means for improving Chapter 1 students' learning was not supported. However, the outcome measure emphasized student competency in the basic skills. The approach of offering at-risk students teacher-directed basic skills within the Chapter 1 program and student-centered, advanced skills within the regular classroom appeared to be one promising strategy. Second, as expected, schoolwide alignment and coordination of Chapter 1 and the regular program was related to increased educational growth. Third, greater school-level decision-making autonomy, in and of itself, did not influence longitudinal achievement. However, in some cases, schools that integrated collaborative principal/teacher leadership with a clear mission shared by all staff were more likely to contain students with improved learning rates.

Several policy implications were suggested by the results. First, without strong collaborative leadership provided by both principals and teachers, efforts to grant high-poverty schools greater latitude in educational decisionmaking are not likely to improve student learning. Second, early elementary programs that operate on a longer academic year may improve learning within high-poverty schools. Current and future Title I programs that offer young children additional learning opportunities beyond the regular school year through extended year services may hold promise. Third, if learning of the basic skills is the desired end, schools and teachers must offer at-risk Title I students instruction that focuses on the basics through a teacher-directed approach. Nevertheless, we do not suggest that teachers abandon attempts to provide student-centered, advanced-skills oriented instruction. Regular

and Title I classrooms that balance teacher-directed basic skills and student-centered, advanced skills instructional approaches may expand students' educational experiences and facilitate improved learning of a more challenging curriculum. Finally, at the school-level, Title I and regular staff must balance and coordinate their efforts to facilitate learning for all students within high-poverty schools. The *Prospects* data revealed implications that seem to merit further consideration by current Title I policymakers and stakeholders, and future investigation by educational researchers.

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Section 1: Introduction

The overall purpose of the analyses detailed in this report was to make use of the *Prospects* data to discover the variations in school and classroom attributes that are associated with improved student achievement outcomes. Of particular interest were those attributes of Chapter 1 and regular school programs that contribute to improved outcomes for educationally at-risk students. Also, of secondary importance, the analyses were designed to measure the relationships between academic achievement and various student background attributes, most notably, Chapter 1 participation.

The analysis plan was guided by current educational research and inspired by the model for school improvement suggested by systemic reform (O'Day and Smith, 1993). Although the notion of systemic reform necessarily begins with and is supported by federal and state policies, the idealized model suggests three school-level components that may account for differences among schools in the effectiveness of their Chapter 1 and regular school programs:

- attributes of Chapter 1 and regular classroom instruction;
- coordination between the Chapter 1 and regular school program;
- types of local school decision-making and governance patterns.

More specifically, by analyzing the variability in these features across schools, recent federal, state, local, and school-based efforts to reform teaching, to reconcile fragmentation between Chapter 1 and regular classroom services, and to foster effective school-based decision-making and leadership will be better understood. These analyses respond to several of the central issues surrounding systemic reform, namely:

- What effects do curricula and instruction that place more emphasis on higher-order skills have on students' outcomes?
- What effects do schoolwide alignment and coordination of Chapter 1 and the regular program have on students' educational growth?
- What effects do increased school-level autonomy and participatory staff decision-making have on the learning outcomes for students?

Building an Analytic Framework Based on What Works

The systemic reform vision grew out of empirical models of "effective schools" for disadvantaged students which emerged during the 1970s. Despite variations in research design, these studies revealed strikingly similar features of effective schools serving disadvantaged students living in poverty. In reviews of the effective schools literature, Edmonds (1979), Purkey and Smith (1983), and Rosenholtz (1985) highlighted the following

characteristics of unusually effective schools serving minority students from low socioeconomic backgrounds:

- autonomous school-site management;
- staff stability;
- strong leadership by principals and/or teachers;
- clear curriculum articulation and organization;
- effective sustained schoolwide professional development;
- parental involvement and community support;
- collaborative planning among school staff;
- maximized student learning time;
- goal consensus among school administrators and teachers.

Although these school-level attributes emphasize key structural and organizational elements of effective schools, they merely provide a foundation to support the improvement of classroom practices. Alone, they do not define the academic content and instructional activities that are essential for maximizing the achievement of at-risk students.

The most widely accepted and applied curriculum for Chapter 1 students emphasizes a skill-based, sequentially-ordered curriculum. Commonly, these skills are taught through teacher-directed instruction with frequent opportunities for practice and review in highly homogenous whole-class or small-group formats. In summarizing research on the relationship between instruction and basic skill acquisition, Brophy (1979) found four central teaching strategies that promoted achievement:

- structured, teacher-led instruction;
- brisk instructional pacing;
- frequent feedback and reinforcement;
- communicating the expectation that all children can learn.

Carried out by skilled teachers, these approaches typically lead to improved content mastery of the basic skills. However, an emerging set of ideas about teaching at-risk children has begun to challenge this emphasis on instruction that is based on the narrowly defined, tightly-sequenced mastery of discrete sets of skills (Knapp and Shields, 1990).

At-risk students typically have few opportunities to apply basic skills to out-of-school experiences, and with in-school curricula that often fail to place discrete skills in the more challenging and interesting context of complex and meaningful problems and real-life situations, the children of poverty are particularly prone to view the repetitive learning of basic skills as lacking in purpose (Knapp and Shields, 1990). This continued concentration on

educational deficits through remediation combined with a lack of regard for the unique skills and life experiences that students bring to the classroom may frustrate and impede the achievement of at-risk students. As a result, the growing population of poor children in the United States tends to have fewer opportunities to learn and to apply more challenging academic curricula.

An evolving body of research has demonstrated that by comparison with conventional practices, Chapter 1 instruction that emphasizes meaning and understanding is more effective at inculcating advanced skills, and is at least as effective at teaching basic skills (Knapp, Shields, and Turnbull, 1992). This research has stressed additional attributes that characterize effective schools, especially those providing compensatory education services. These attributes emphasize curricular content and instructional practices that help disadvantaged students master both basic and complex skills. Reisner and Haslam (1992) broadly defined some of these practices as:

- instruction that focuses on student comprehension and understanding;
- curriculum that integrates basic skills with challenging content;
- an optimal balance of teacher-led and student-directed learning;
- applying both basic and advanced skills to real-life situations and problems;
- teaching that does not solely rely on text book and worksheet activities.

To frame our analyses, we have adopted elements of the model of effective schools that serve at-risk students advanced in the revised *Effective Compensatory Education Sourcebook* (Reisner and Haslam, 1992). This model is based upon the effective schools research findings described above, but details additional curricular and instructional components that are critical for improving Chapter 1 students' outcomes. In addition, as mentioned previously, the effective schools model and the systemic reform ideal share many common components. Effective instructional and school attributes defined in the revised *Effective Compensatory Education Sourcebook* correspond with those that are articulated in both models. The *Prospects* data support the modelling of three of four general categories and most of the attributes within each category. The *Sourcebook* categories and attributes for which measures are available include:

<u>School Structural Attributes</u>

- School-site leadership that articulates goals and builds consensus around them.
- Clear academic goals that emphasize high expectations and achievement.

<u>School Organizational Attributes</u>

- Opportunities and resources for professional development.
- Coordination of Chapter 1 with other elements of students' school experiences.

- Partnerships with parents and community members to achieve educational goals.

Curriculum and Instructional Attributes

- Curriculum that includes instruction in comprehension skills.
- Curriculum that offers at-risk students opportunities to learn challenging content.
- Instruction that highlights meaning and understanding.
- Recognition that students sometimes learn best by directing their own learning and by working together.

Connecting the *Prospects* Data to the Analytic Framework

The Comprehensive Test of Basic Skills (CTBS/4) reading and math vertical scale scores were used to fit each student's academic growth trajectory over the three testing points, spring 1991 (the baseline achievement tests were administered to Cohort 1 students during the fall of 1992) through spring 1993. Variation among student growth trajectories was modeled using three general types of attributes:

- student background attributes;
- instructional attributes, and;
- school attributes.

The developed factors and single-item variables that defined these attributes were gleaned from various *Prospects* survey data files and from the Survey Control File. Many school and instructional factors and variables that were developed correspond to the elements of effective schools that serve at-risk students. Additional variables were developed to model key differences among student backgrounds (e.g., socioeconomic status (SES), gender, and race), basic school compositional attributes (e.g., urbanicity, size, and racial distributions), and teacher background characteristics (e.g., highest degree earned, certification credentials, and years teaching).

Sections 2, 3, and 4, which follow, describe all composite and single-item variables that were developed and detail the specific procedures that were followed in constructing the student, instructional, and school variables for all three grade cohorts (1, 3 and 7). Section 5 details the hierarchical model methods that we employed and delineates the characteristics of the various analytical samples. Section 6 provides the tabulated results of the analyses. Section 7 summarizes the findings of this work. Finally, Section 8 discusses the key policy implications of the results.

Section 2. Development of Student Characteristic Measures

A number of student characteristic single-item and composite variables were developed using items from the student, parent, and student profile questionnaires. In addition, many basic background characteristics, such as race/ethnicity, gender, and grade level, were based directly on variables contained in the *Prospects* Survey Control File. Below, Table 2.1 references the student attributes and the questionnaire items and data elements from which they were derived.

Composite Variables

From the student questionnaire, items were culled to represent one of several student affective factors. These factors were developed for students from the 3rd and 7th grade cohorts for each year of the study. It was not possible to develop the affective variables for students from the first grade cohort because they were not administered a student questionnaire. Select items from the parent questionnaire were used to develop SES measures for students from all cohorts. Finally, a student engagement factor was constructed based on items from the student profile questionnaire, which was completed by each student's teacher.

The factors were developed for each of the three years, and an overall measure was constructed that was the average measure across the three years. A general procedure was followed to develop the factors. This procedure involved five steps. First, a set of items was selected to represent a theoretical construct, such as self-concept, and the items were recoded so that they were amenable to statistical analysis. For instance, negatively phrased items were reverse coded, ambiguous multiple responses were coded as missing, and each item's lowest possible scale value was set at zero.

Second, principle component analysis with varimax rotation was utilized to confirm that the factor structures were valid. For some items in particular years, factor loadings were below .20, but these items were retained because in other years the loadings were above .20. To maintain the same factor definition across years, these items were retained so that the same set of items was used for each year to represent the given factor. Third, all items were converted to z-scores. Fourth, a mean z-score for each set of items was computed for each student for each of the three years. If an item response was missing for a student, the item was not used to compute the mean z-score for that student. Fifth, an overall longitudinal factor measure, which was the mean of the three possible yearly z-scores, was computed. If a yearly mean z-score was missing for a student, the average of the other two yearly values was used as the overall measure for that student. If two yearly measures were missing, the single yearly value was used as the overall measure. Please refer to Tables 2.2 through 2.9 in Appendix A for the tabulated results of the principle component analyses.

Table 2.1: Student Background Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Student Background Attributes	Factors/Variables	Survey Instruments / Data File					
		Student (Cohort 3)	Student (Cohort 7)	Student Profile	Student Record Abstract	Parent	Survey Control File
		Items/Data Elements from which Factors/Variables were Derived					
	Gender						GENDER
	Retained						Y1/Y2/Y3 GRADE
	Urbanicity						URBNCTY
	Race/Ethnicity						RACE
	Mobility 1. Attended new school '92 & '93 2. Number of schools attended	4	4				Y2/Y3 MOVEST
	Compensatory Program Participation 1. Chapter 1 R/E/LA 2. Chapter 1 Math 3. Other R/E/LA 4. Other Math				23A,C,D 23B 24A1-A3, C1-C3, D1-D3 24B1-B3		
	SES					76C, 80C, 82C, 96C, 100C, 103	
	Math Self-efficacy	21; 22A-B,D	18; 25A-B,D; 26				
	Reading Self-efficacy	10; 11A-B,D	19; 20A-B,D; 21				
	Self-concept	82A,D,F-H,J; 83A-D	80A,D,E,H-J,L; 81A-E				
	Locus of Control	82B,C,E,I	82B,C,F,G,K,M				
	Attitude Toward School	11C; 22C; 43; 44A-C	20C; 25C; 32A-C; 78A-C				
	Student Engagement			3; 9B-C; 10A-C,E-F; 11A,C			
	Parent Involvement	65A-E; 67A-C; 69A-B; 76A-B,D	61A-G; 63A-D,G; 66A-B; 75A-C				

Composite Variable Descriptions

Based on the variables referenced in Table 2.1, and using the methods described above, the following student composite variables were developed from the *Prospects* survey instruments:

Self-concept

This variable represented the degree to which the student agreed or disagreed that s/he is a good person, who is of value.

Locus of control

Locus of control was based on how strongly students agreed or disagreed that they have control over circumstances in their lives, and that these circumstances are less often affected by chance and luck.

Math self-efficacy

This composite measured how strongly students agreed or disagreed that they were a good math student, who had few problems with the subject.

Student engagement

In the Student Profile instrument, teachers were asked how strongly they agreed or disagreed that a student expressed attitudes and exhibited behaviors indicating an interest in school work and a desire to learn.

Level of parent involvement

This broadly defined measure of parent involvement included the students' reports of their parents' level of participation in: (1) educationally-related activities at home, and; (2) school-based activities.

SES

The parent questionnaire items selected to represent the SES factor were similar to those used for the 1988 National Education Longitudinal Study (NELS). These items included the respondents' educational level and occupational prestige. If available, the educational level and occupational prestige of the respondent's spouse were included. The values imputed for the occupational prestige ratings were those developed by the National Opinion Research Center (NORC) for the 1989 General Social Survey (GSS). The GSS Prestige scale used the 1980 Census Occupation Classification System, which matched the classification scheme that was used in the occupation items 80C and 82C that appeared in the *Prospects* parent questionnaire. Also, the SES composite included a categorical variable indicating family income bracket. Finally, the parent questionnaire included items that asked the parents to report if their homes contained certain educationally-related features and items. These questions were used to develop a composite factor indicating students' access to educationally-related resources in their homes. The selected items asked the parents to report if they had the following resources in their homes: a place for their child to study; a daily

newspaper; dictionary; an encyclopedia/other reference book; a regularly received magazine; a typewriter; a computer; more than 50 books, and; a pocket calculator. Responses to these items were standardized and the average z-score for each student was included in the SES composite.

Student Categorical and Continuous Variables

Categorical and continuous variables that were developed for the students were based on single items from one particular data file. Yearly variables were produced for most of the categorical and continuous variables. Many basic dummy codes were recoded values of *Prospects* Survey Control File data elements. Many of these included static student characteristics, such as gender and race/ethnicity, which were based on a single Survey Control File variable.

Gender

Based on the Survey Control File GENDER variable, females were coded "0" and males were coded "1."

Retained

Each student's year 1 Survey Control File grade value was compared to his/her following year 2 grade value. In addition, students' year 2 grade values were compared to their year 3 grades. Students who had a year 3 grade value that was less than or equal to their year 2 value and students who had a year 2 grade value that was less than or equal to their year 1 value were coded as retained students and received a dummy code value of "1."

Urbanicity

Three urbanicity dummy codes, urban, suburban, and rural, were developed based on the URBNCTY alpha variable. The urbanicity corresponds to the location of the school that the student attended.

Race/ethnicity

Dummy codes, which were based on the Survey Control File RACE variable, were created for: African American, American Indian, Asian, Caucasian, Latino, and other race/ethnicity.

Mobility

Two variables were developed as indicators of student mobility from school to school. First, yearly dummy codes, which were based on the alpha Y2MOVEST and numeric Y3MOVEST Survey Control File variables, indicated that the student attended a new school in the given year. Second, item 3 from the 1991 cohort 3 Student Questionnaire asked students: "Starting with first grade, how many different schools have you gone to?" Similarly, the 1991 cohort 7 Student Questionnaire asked: "Starting in the first grade, how many different schools have you gone to, including this school?" Responses from cohort 3

students were coded "1" through "5," and cohort 7 students' responses were coded "1" through "10." These values corresponded to the number of schools attended by the student. The maximum coded values of "5" for cohort 3 and "10" for cohort 7, included those students who attended a greater number of schools than these maximum values.

Compensatory Education Participation Variables

Two categories of compensatory education participation variables were created:

- Dichotomous codes indicating year-by-year subject-specific participation in federal Chapter 1 programs and in other federal, state, and local compensatory services;
- Two- and three-year subject-specific Chapter 1 participation patterns (e.g., received Chapter 1 math in 1991, did not receive services in 1992, and participated in 1993).

Chapter 1 and other compensatory education participation variables

These variables were created based on data from the Student Record Abstract instrument, which was completed by the *Prospects* data collection staff, and from the Survey Control data file. Students' yearly Chapter 1 participation status was determined based on responses to the item from the Student Profile that asked "(p)lease indicate the student's participation or enrollment in the current school year in the following federally funded Chapter 1 programs or services offered by the school." Student participation status was indicated for each of the following program types:

- Chapter 1 reading;
- Chapter 1 math;
- Chapter 1 English/language arts;
- Chapter 1 combined reading/English/language arts.

After coding each student's yearly participation status, the Chapter 1 math and English teacher ID fields from the Survey Control file were consulted as a quality control check. If a student was linked to a Chapter 1 math or English teacher ID in the Survey Control file, the student was coded as a participant, in the applicable subject(s), regardless of the reported status in the Student Profile instrument.

Participation in other federally-, state-, or locally-funded compensatory services was determined based on the Student Record Abstract item that asked "(p)lease indicate the student's participation or enrollment in the current school year in the following programs or services funded by sources other than Chapter 1 and offered at this school." Yearly participation status was recorded for the following services:

- Remedial reading;
- Remedial math;
- Remedial English/language arts;

- Remedial combined reading/English/language arts.

Another set of variables was developed to indicate each student's participation in any one of three R/E/LA compensatory services. Chapter 1 *R/E/LA* participants were those students who received Chapter 1 reading, Chapter 1 English/language arts, or Chapter 1 combined reading/English/language arts services.

Two- and three-year Chapter 1 participation pattern variables

Based on the developed dichotomous Chapter 1 participation variables, Chapter 1 participation pattern variables were created for each student by subject (i.e., R/E/LA and math). One set of variables represented participation patterns across all three years (1991, 1992, and 1993) for Cohorts 3 and 7, and a second set indicated two-year participation patterns for 1992 and 1993 for Cohort 1. Table 2.28 below shows the various participation patterns that were coded. In addition, the unweighted student sample sizes are presented for each cohort by subject.

Table 2.28: Two- and Three-year Chapter 1 Participation Pattern Variables and Unweighted Student Sample Sizes

Chapter 1 Participation by Year			Student Sample Sizes by Cohort / Subject			
1991	1992	1993	Cohort 1			
Two-Year Participation Patterns for Cohort 1			Math (n=5,026)		R/E/LA (n=5,731)	
NA	Yes	Yes	51		381	
NA	Yes	No	157		438	
NA	No	Yes	78		296	
NA	No	No	4,740		4,016	
1991	1992	1993	Cohort 3		Cohort 7	
Three-Year Participation Patterns for Cohorts 3 and 7			Math (n=4,077)	R/E/LA (n=4,306)	Math (n=3,237)	R/E/LA (n=3,353)
Yes	Yes	Yes	34	190	0	14
Yes	Yes	No	80	144	65	89
Yes	No	Yes	24	55	0	7
Yes	No	No	237	335	82	127
No	No	Yes	34	67	1	20
No	Yes	Yes	13	145	0	11
No	Yes	No	89	97	39	58
No	No	No	3,566	3,273	3,050	3,027

Imputing Missing Test Scores

There were many students from each cohort who were missing one, two, or three of the three possible test scores for each CTBS/4 subtest. Obviously, students with missing test scores could not be used in analyses of longitudinal growth. To increase the analyzable sample and the generalizability of the results, test scores were imputed for those students missing one score from any one of three possible years. Using sub-samples of students for which all three test scores were present, a number of prediction models were generated using key variables to predict each test score across cohorts and selected subtests. Several sets of independent variables were used, including test scores at the other two time points, ethnicity, teachers' reports of student engagement, student affective variables (e.g., self-concept, and reading and math self-efficacy), and SES. Numerous interaction terms, such as SES by ethnicity, were included as predictors.

The best predictors of each test score at a given time point were the test scores at the other two time points. This finding held across cohorts, subtests, and time points. Adding other variables did not significantly increase the variance accounted for by the models once the other two test scores were entered into the models. The coefficients of the ethnicity dummy variables, however, were substantial. Therefore, these variables were included along with the other two test scores as predictors in the final imputation models for each cohort, subtest, and time point. The dummy variable representing Caucasian ethnicity was not included in the models, so that the coefficients of the other ethnicity dummy variables indicate the displacement in predicted test score for each ethnicity from the Caucasian students. The final prediction models by cohort, subtest, and time point are presented in Tables 2.10 through 2.27 in Appendix B.

Section 3. Development of Instructional Variables

Categorical, continuous, and composite variables were developed using items from the classroom and Chapter 1 teacher questionnaires. Individual questionnaire items or composite measures based on multiple items defined various classroom-level instructional attributes. The instructional attributes and the questionnaire items from which they were derived are referenced below in Table 3.1.

Two sets of yearly variables, from 1992 and 1993, were developed to model variation in the student growth trajectories. Although many longitudinal school and student variables were developed, no longitudinal instructional variables were produced. Because the instruction experienced by students changed as most students entered new classrooms and received instruction from new teachers during each successive year, development of longitudinal instructional variables was not appropriate. Aside from this difference, the general procedures followed in producing the instructional composite variables were similar to those that were used for creating the student and school factors.

Composite Variables

Development of instructional composite variables involved four steps. First, a set of items was selected to represent a theoretical construct, such as teacher self-efficacy, and all items were recoded so that they were amenable to statistical analysis. For instance, negatively phrased items were reverse coded, ambiguous multiple responses were coded as missing, and all lowest possible values were assigned a value of zero.

Second, confirmatory principle component analyses with varimax rotation provided empirical tests of the validity of the factor structures. To maintain consistency in the interpretation and measurement characteristics of the factors, whenever possible, the constructs were based on the same set of items from both years. However, new items, which replaced omitted 1992 items, were used in the 1993 Chapter 1 and regular classroom teacher R/E/LA factors: the Teacher-led Basic-Skills Oriented Approach attribute, and the Student-centered Advanced-skills Oriented Approach factor. In addition, alterations to the Chapter 1 and Classroom Teacher Questionnaires' item response options and codings, changed other items in significant ways. Consistent high factor loadings confirmed the structures of the constructs that were developed based on 1992 data. However, the 1993 Teacher-led Basic-Skills Oriented Approach and Student-centered Advanced-skills Approach factors were based on considerably fewer items, some of which were slightly different from the 1992 items. Therefore, some inconsistencies were detected in the 1993 factor loadings (see Tables 3.2 through 3.13). Finally, no items that were used to develop the 1992 Teacher Self-efficacy factor were available in the 1993 Chapter 1 and Classroom Teacher Questionnaires.

Table 3.1: Instructional Attributes: Factors/Variables Derived from *Prospects* Survey Instruments

Instructional Attributes	Factors/Variables	Survey Instruments	
		Chapter 1 Teacher/Chapter 1 Aide	Classroom Teacher
		Items from which Factors and Variables were Derived	
Use of Specialized Programs	Madeline Hunter's Methods Mastery Learning Approach Cooperative Learning Individualized Instruction Phonetic Reading Program Whole Language Methods Writing Process Methods	G-5A (M), I-5A (LA) G-5B (M), I-5B (LA) G-5C (M), I-5C (LA) G-5D (M), I-5G (LA) I-5D (LA) I-5E (LA) I-5F (LA)	G-4A (M), J-4A (LA) G-4B (M), J-4B (LA) G-4C (M), J-4C (LA) G-4D (M), J-4G (LA) J-4D (LA) J-4E (LA) J-4F (LA)
Teacher's Instructional Approach	Teacher-led, Basic-skills Oriented Approach	B-1A,E; H-22A,D,G (M); J-23A,C,I (LA); H-24A,C,K (M); J-26I,L,M,Q,R,T (LA); H-25E-G,K (M); J-27J,Q (LA); H-26A-D,F (M); J-28A-D,F (LA); 1993: G-20D,P (LA)	C-1A,E; I-19A,D,G (M); L-20A,C,I (LA); I-20A,C,K (M); L-22I,L,M,Q,R,T (LA); I-21E-G,K (M); L-23J,Q (LA); I-22A-D,F (M); L-24A-D,F (LA); 1993: F-8D,P (LA)
	Student-centered, Advanced-skills Oriented Approach	B-1C,F,G,H,M; H-22E,F,I,J (M); J-23D-F (LA); H-24B, D-G,I,L-S (M); J-25 (LA); H-25B,C,H,I (M); J-26A-G,U-W,Y,Z (LA); H-26E (M); J-26AA-FF (LA); J-27B-D, H,I, N-P (LA); J-28E (LA); 1993: G-20H (LA); G-20H,I, J,K,O,Q (LA)	C-1C,F,G,H,M; I-19E,F,I,J (M); L-20D-F (LA); I-20B,D-G,I,L-S (M); L-21 (LA); I-21B,C,H,I (M); L-22A-G,U-W,Y,Z (LA); I-22E (M); L-22AA-FF (LA); L-23B-D,H,I, N-P (LA); L-24E (LA); 1993: F-8H,I,J,K,O,Q (LA)
	Assignment of Homework	H-27 (M), J-29 (LA)	I-23 (M), L-25 (LA)
Instructional Grouping	Regular Class Formed Based on Ability		I-2 (M), L-3 (LA)
	In-Class Grouping Practices 1. Individual Instruction 2. Small-group Instruction 3. Whole-class Instruction	 H-19A (M), J-20A (LA) H-19B (M), J-20B (LA) H-19C (M), J-20C (LA)	 I-16A (M), L-17A (LA) I-16B (M), L-17B (LA) I-16C (M), L-17C (LA)
	Use of Tutors	G-6A-E (M), I-6A-F (LA)	G-5A-E (M), J-5A-F (LA)
Instructional Resources	Opportunity to Learn / Instructional Time 1. Class Time Devoted to Academic Instruction 2. Minutes per Week of Instruction in Subject	 B-1A H-6 (M), H-7 (M), J-7 (LA), J-8 (LA)	 B-1A I-5 (M), I-6 (M), L-6 (LA), L-7 (LA)
	Class Size	H-3 (M), J-4 (LA)	I-3 (M), L-4 (LA)
	Availability of Classroom Aides 1. Number of Aides 2. Hours per week Assisted by Aides	 H-10 (M), J-11 (LA) H-13 (M), J-14 (LA)	 I-8 (M), L-9 (LA) I-9 (M), L-10 (LA)
Teacher Background Characteristics	Teacher Self-Efficacy	E-3A,B,D-F, E-4A-F	E-3A,B,D-F, E-4A-F
	Highest Degree	F-9	F-8
	Years Teaching	F-4	F-3
	Certification	F-7	F-6
	Chapter 1 Teacher / Aide	A-1	

The third step involved converting all items to z-scores before combining them to produce the composites. Fourth, mean z-scores for each set of items were computed for each teacher for each of the two years. If an item response was missing, it was not used to compute the mean z-score for that teacher. Tables 3.2 through 3.13 presented in Appendix C provide the results of the principal component analyses.

Composite Variable Descriptions

Based on the variables referenced in Table 3.1, and using the methods outlined above, the following instructional composite variables were developed from the *Prospects* survey instruments:

Teacher self-efficacy

This variable represented the degree to which the teacher believed that his/her instructional practices had a positive impact on his/her students, regardless of their particular abilities and backgrounds.

Teacher-led, basic-skills oriented approach

The 1992 subject-specific composites were composed of variables belonging to three general categories: (1) materials used; (2) topics and skills taught; (3) instructional practices employed. Teachers who scored highly on this measure tended to report more frequent use of traditional materials (e.g., textbooks, practice sheets, basal readers and other controlled vocabulary materials), emphasized basic topics and basic skills (e.g., learning whole numbers, basic whole number operations, and other facts and concepts, and learning manuscript, cursive writing, and vocabulary and word meanings), and frequently checked students' mastery of skills/materials and provided feedback and reteaching. Due to the omission of many of the 1992 Classroom Teacher Questionnaire items, the 1993 composites were based on smaller numbers of items from two of the three categories mentioned above: (1) materials used, and; (2) topics and skills taught. Like the classroom teacher composite, the 1993 Chapter 1 teacher factor was composed of fewer items, but it contained items from all three of the original 1992 categories.

Student-centered, advanced-skills oriented approach

The 1992 composites for math and for R/E/LA were based on variables from the three categories mentioned above. High scoring math teachers reported frequent use of hands-on materials (e.g., manipulatives, calculators, and life skills materials), placed an emphasis on advanced topics (e.g., measurement, geometry, statistics) and on developing students' appreciation of the practical applications of math, and tended to permit frequent opportunities for students to work together. R/E/LA teachers who scored highly indicated frequent use of meaningful reading materials (e.g., children and adult newspapers and magazines, and a variety of literary materials), and emphasized comprehension skills (e.g., drawing inferences, and synthesizing information) and students' appreciation of reading and writing, and tended to provide frequent opportunities for students to work together and to

apply reading and writing in practical, meaningful ways. The 1993 classroom teacher factors were based on smaller numbers of items from two of the three categories mentioned above: (1) materials used, and; (2) topics and skills taught. Similarly, the 1993 Chapter 1 teacher composite was composed of fewer items, but it contained items from all three of the original 1992 categories.

Instructional Categorical and Continuous Variables

Categorical and continuous variables that were developed for teachers were based on single items from one particular instrument. Subject-specific categorical and continuous variables were produced separately by year, 1992 and 1993, and by teacher type, regular classroom and Chapter 1 teachers.

Use of Specialized Programs

Seven subject-specific dummy codes were produced based on data from Classroom Teacher Questionnaire items G-4A-D for math, and items J-4A-F for R/E/LA. The variables for Chapter 1 teachers were based on items G-5A-D for math, and items I-5A-F for R/E/LA. In all cases, the question asked teachers: "This item pertains to specific classroom instructional methods for teaching (math, R/E/LA). Please indicate if you regularly use any of these approaches by circling the corresponding number." The specific methods from which math teachers could choose were: (A) Madeline Hunter's Methods; (B) Mastery Learning; (C) Cooperative Learning; (D) Individual Instruction. In addition to the above methods, R/E/LA teachers had several additional methods from which to choose, including: Phonetic Reading program; Whole Language, and; Writing Process Methods.

Assignment of Homework

This continuous variable was based on item I-23 for regular classroom math teachers and item L-25 for classroom R/E/LA teachers. The variable for Chapter 1 teachers was based on item H-27 for math, and item J-29 for R/E/LA. In all cases, this item asked teachers: "During an average week, about how much homework do you assign your (math, R/E/LA) students in this class to the nearest hour? If you do not assign homework, enter '0.'"

Regular Class Formed Based on Ability

Subject-specific dummy codes were developed based on item I-2 for regular classroom math teachers and item L-3 for regular classroom R/E/LA teachers. Both questions asked classroom teachers: "Were students enrolled in this class based on similar ability?" A "yes" response was coded as "1," and a "no" response as "0."

In-class Grouping Practices

Three continuous variables were developed for math and R/E/LA regular classroom and Chapter 1 teachers. The variables for regular classroom teachers were based on data

elements I-16A-C for math teachers, and on L-17A-C for R/E/LA teachers. The variables for Chapter 1 teachers were produced from data elements H-19A-C for math, and from elements J-20A-C for R/E/LA. In all cases, the questionnaire items requested teachers to "(p)lease estimate what percent of your (math, R/E/LA) instruction with this class is conducted in the following modes: Individual instruction; Small group instruction; Whole-class instruction." The teacher's estimates of the percent of instruction conducted in each of the modes, individual instruction, small group instruction, whole-class instruction, were used to develop the three in-class grouping variables.

Use of Tutors

Six subject-specific dummy codes were created for both Chapter 1 and regular classroom teachers that indicated the use of various one-to-one tutoring arrangements in the classroom. The dummy codes included: (1) one-to-one tutoring by certified teachers; (2) one-to-one tutoring by paraprofessionals; (3) one-to-one tutoring by volunteers or parents; (4) one-to-one tutoring by older students; (5) one-to-one tutoring by same age students, and; (6) use of any one of these five one-to-one tutoring strategies. The items for Chapter 1 and classroom math teachers (G-6 and G-5, respectively) and for Chapter 1 and classroom R/E/LA teachers (I-6 and J-5, respectively) stated: "Below is a list of one-to-one tutoring arrangements for at-risk students. If your students regularly participate in any of these to learn (math, R/E/LA), please indicate this by circling the corresponding number(s). Circle all that apply." If the teacher indicated that the one-to-one tutoring strategy was used, the dummy code was assigned a value of "1." If the teacher indicated that any one of the five tutoring arrangements was used in the classroom, a separate dummy code was set to "1" to indicate that some type of one-to-one tutoring strategy was used.

Opportunity to Learn / Instructional Time

Two variables were constructed for Chapter 1 and regular classroom math and R/E/LA teachers: (1) class time devoted to academic instruction, and; (2) minutes per week of instruction in subject. The same item (referenced as B-1A in both the Classroom Teacher Questionnaire and the Chapter 1 Teacher Questionnaire) asked math and R/E/LA teachers to indicate "(a)pproximately what percent of your classroom time in the course of a typical school day is spent in the following activities? Total should equal 100 percent." Teachers estimated the percent of classroom time devoted to: (A) academic instruction; (B) personal/social development of students; (C) noninstructional tasks, and; (D) other classroom activities. The teachers' reports of the percent of classroom time spent on (A) academic instruction were used to create a continuous variable representing the percent of classroom time devoted to academic instruction.

In addition, regular classroom math (I-5) and R/E/LA (L-6) teachers were asked "(h)ow many days a week is direct instruction in (math, R/E/LA) given to students in this class as part of the regular instructional program?" A second question (I-6 for classroom math teachers, and L-7 for classroom R/E/LA teachers) asked: "On those days, about how many minutes of direct instruction in (math, R/E/LA) per day? Teachers' responses to these two questions were multiplied to develop estimates of the number of minutes per week that

teachers provided subject-specific instruction in the classroom. Similarly, subject-specific quantity of Chapter 1 services offered were developed based on two items from the Chapter 1 Teacher/Aide questionnaires (H-6 and H-7 for math, and J-7 and J-8 for R/E/LA). These items asked teachers/aides to indicate "(h)ow many days a week do you provide direct instruction in (math or R/E/LA) to Chapter 1 students in this class," and "(o)n those days, about how many minutes per day does your typical Chapter 1 student receive direct instruction in (math or R/E/LA) that is made possible by Chapter 1?" The measures were calculated as the number of days multiplied by the number of minutes of instruction, which yielded an average weekly estimate of the number of minutes per week that Chapter 1 services were offered.

Class Size

Item I-3 for classroom math teachers and item L-4 for classroom R/E/LA teachers asked: "How many students are enrolled in this class?" Similar questions for Chapter 1 math and R/E/LA were referenced as items H-3 and J-4, respectively. Continuous subject-specific class size variables were constructed based on the Chapter 1 and regular classroom teacher responses to this question.

Availability of Classroom Aides

A pair of continuous variables, number of classroom aides and number of hours per week assisted by aides, were developed based on subject-specific questions from both the Chapter 1 and Regular Classroom Teacher Questionnaire. Item I-8 for classroom math teachers, item H-10 for Chapter 1 math teachers, item L-9 for classroom R/E/LA teachers, and item J-11 for Chapter 1 R/E/LA teachers asked: "How many aides assist in this (math, R/E/LA) class?" Secondly, item I-9 for classroom math teachers, item H-13 for Chapter 1 math teachers, item L-10 for classroom R/E/LA teachers, and item J-14 for Chapter 1 R/E/LA teachers asked: "How many hours a week are you assisted by aide(s) in this (math, R/E/LA) class?"

Highest Degree

Item F-8 from the Regular Teacher Questionnaire and item F-9 from the Chapter 1 Teacher Questionnaire asked "(w)hat is the highest academic degree you hold?" "Less than a bachelor's degree" was coded as "0," "Bachelor's" was coded as "1," "At least one year of course work beyond a Bachelor's, but not a graduate degree" was coded as "2," "Master's" was coded as "3," and "Education specialist or professional diploma based on at least one year of work past master's degree level," "Doctorate," and "First professional degree" was coded as "4."

Years Teaching

This continuous variable was based on item F-3 from the Regular Teacher Questionnaire and item F-4 from the Chapter 1 Teacher Questionnaire, which asked "(c)ounting this year, how many years in total have you taught at either the elementary or secondary level?"

Certification

Item F-6 from the Regular Teacher Questionnaire and item F-7 from the Chapter 1 Teacher Questionnaire asked "(w)hat type of teaching certification do you hold from the state where you teach?" "I am not certified" was coded as "0," "Probationary certification," "temporary, provisional, or emergency certification," and "Alternative certification" were coded as "1," and "Permanent regular or standard certification" was coded as "2."

Chapter 1 Teacher / Aide

This dummy code distinguished Chapter 1 teachers from Chapter 1 aides. Item A-1 asked Chapter 1 instructors to "(p)lease select the one category that best describes you." Those Chapter 1 instructors who answered "Federally funded Chapter 1 aide" were coded as "1," and those instructors who indicated "Federally funded Chapter 1 teacher" were coded as "0."

Section 4. Development of School-Level Variables

A variety of school-level categorical, continuous, and composite variables were developed using items from the classroom and Chapter 1 teacher, principal, and Characteristics of Schools and Programs survey instruments. Individual questionnaire items or composite measures based on multiple items defined various school-level attributes belonging to one of three general classes of variables: (1) School Compositional Attributes; (2) School Structural Attributes, and; (3) School Organizational Attributes. The school attributes and the specific questionnaire items from which they were derived are referenced below in Tables 4.1, 4.2, and 4.3.

A set of yearly variables was developed for each of the three waves of data collection. In addition, overall longitudinal measures were constructed for composite and continuous factors that were average measures across the three years. The general procedure that was followed to develop the composite factors was similar to that which was used for the student-level variables. In some cases, additional variable construction methods were employed to account for multiple sources of data.

Composite Variables

Development of school-level composite variables involved five general steps. First, a set of items was selected to represent a theoretical construct, such as the extent of staff influence on school policy, and all items were recoded so that they were amenable to statistical analysis. For instance, negatively phrased items were reverse coded, ambiguous multiple responses were coded as missing, and all lowest possible values were assigned a value of zero.

Second, confirmatory principle component analyses with varimax rotation provided empirical tests of the validity of the factor structures. To maintain consistent factor definitions across years, the same set of items was used for each year to represent the given construct. As evinced by the consistent high component loadings from year to year (see Tables 4.4 through Table 4.19), this procedure also proved to provide reliable statistical results. Although some individual items were dropped from the *Prospects* instruments across the data collection waves, the remaining items provided sufficient information for the affected years. The third step involved converting all items to z-scores before combining them to produce the composites. Fourth, mean z-scores for each set of items were computed for each school for each of the three years. If an item response was missing, the item was not used to compute the mean z-score for that school. Fifth, an overall factor measure comprising the mean z-scores across the three years was computed by taking the average of the three yearly measures. If a yearly mean z-score was missing, the average of the other two yearly values was used as the overall measure for that school. If two yearly measures were missing, the single yearly value was imputed as the overall measure.

Table 4.1: School Compositional Attributes: Factors/Variables Derived from *Prospects* Survey Instruments/Data File[1]

School Compositional Attributes	Factors/Variables	Survey Instruments/Data File		
		Survey Control File	School Principal	Characteristics of Schools and Programs
		Items from which Factors/Variables are Derived		
	School Size			B-1
	Days of School			B-3
	Urbanicity	URBNCTY		
	Poverty Level			B-11
	Racial Distribution			B-8
	Student Mobility			B-5
	Disciplinary Problems		48A-G, 48L-S	

[1]Although *Prospects* item numbers changed from year to year, to maintain consistency all questionnaire item numbers noted in the tables are the original 1991 numbers.

Table 4.2: School Structural Attributes: Factors/Variables Derived from *Prospects* Survey Instruments

School Structural Attributes	Factors/Variables	Survey Instruments			
		School Principal	Chapter 1 Teacher/ Chapter 1 Aide	Classroom Teacher	Characteristics of Schools and Programs
		Items from which Factors/Variables are Derived			
School-Site Leadership	Principal Leadership		E-1E,F,G,L,M,U	E-1E,F,G,L,M,U	
	Extent of School Decision-making	8A-H			
	Planning Academic Programs	10A-G			
	Disciplinary Policy				E1A-D
Collaboration and Consensus	Goal Consensus		E-1B,I,S	E-1B,I,S	
	Decision-making Collaboration	8A-H			
	Staff Stability	14A-D			
	Staff Influence on School Policy		E-6A-D, E1Y	E-6A-D, E1Y	

Table 4.3: School Organizational Attributes: Factors/Variables Derived from *Prospects* Survey Instruments

School Organizational Attributes	Factors/Variables	Survey Instruments			
		School Principal	Chapter 1 Teacher/ Chapter 1 Aide	Classroom Teacher	Characteristics of Schools and Programs
		Items from which Factors/Variables are Derived			
Coordination of Chapter 1 with the Regular School Program	Consulting other Staff about Evaluating Student Progress		A-14A-C	A-12A-C	
	Learning Fragmentation a. Instruction in Target Subject Missed b. Minutes of Subject Missed			H-7 (M), Q-7 (LA) H-8 (M), Q-8 (LA)	
	Coordination of Chapter 1 with other School Services[2]		D-3A,B,C,E		D-19, D-21
	Coordination of Materials[3]			H-9 (M), Q-9 (LA)	D-20
	Shared Responsibility for Basic Skills Instruction		D-7	D-5	
Opportunities & Resources for Professional Development	Support for Teacher Innovation		E-1N,Q,W	E-1N,Q,W	
	Staff Collegiality		E-1A,J,K,P,R	E-1A,J,K,P,R	
	Inservice Opportunities		F-18, F-20A,B, F-21, F-22	F-17, F-19A,B, F-20, F-21	
Community Partnerships	Parent Involvement at School	34A-M			
	School Relationship with Community[4]	9B,E	E-7A,C	E-7A,C	

[2]Three measures were developed for this variable that were based on survey data from: (a) the Chapter 1 Teacher/Chapter 1 Aide Questionnaire only; (b) the Characteristics of Schools and Programs instrument only; (c) a combination of both sources.

[3]Three measures were developed for both of the subjects that were based on survey data from: (a) the Classroom Teacher Questionnaire only; (b) the Characteristics of Schools and Programs instrument only; (c) a combination of both sources.

[4]Three measures were developed for this variable that were based on survey data from: (a) the School Principal Questionnaire only; (b) the combination of Chapter 1 and regular classroom teachers only; (c) a combination of the teacher and principal sources.

Development of composite variables that were based on responses from different types of respondents and instruments involved additional steps. First, all five processes outlined above were completed independently for each unique instrument that contributed to the composite. For instance, the School Organizational attribute, Support for Innovation, was based on independent yearly Chapter 1 and regular classroom teacher factor measures that were derived from similar sets of items from the Chapter 1 and regular classroom teacher questionnaires. Second, the mean of the combined independent measures was computed to represent the overall school-level score. This procedure provided various school-wide measures that accounted for the perspectives of different types of school staff. Tables 4.1, 4.2, and 4.3 document the particular items and instruments that contributed to each composite measure. The respondents included Chapter 1 and regular classroom teachers, and principals and/or their administrative staff who maintain school records. Although Chapter 1 teaching aides perform important functions in many schools, many of the School Structural and School Organizational attributes did not necessarily apply to these staff. On theoretical grounds, responses from those staff who were identified as teaching aides in the Chapter 1 teacher questionnaire were not considered in the school-level measures. Tables 4.4 through 4.19 in Appendix D present the results of the principal component analyses.

Composite Variable Descriptions

Based on the variables referenced in Tables 4.1, 4.2 and 4.3, and using the methods outlined above, the following school composite variables were developed from the *Prospects* survey instruments:

Disciplinary problems

This variable represents the degree to which the school principal perceived a variety of possible disruptive student behaviors as problems in the school.

Principal leadership

This composite was based on how strongly Chapter 1 and regular teachers agreed or disagreed that their principals displayed several key leadership skills.

Extent of school decision-making

Principals were asked whether various policies, which affected both classrooms and the entire school, were determined by him/her and/or the school's teaching staff. Schools with greater responsibility for determining policies received a higher factor score.

Planning academic programs

Principals' reports of how often s/he met with school staff to identify program needs and to discuss plans and procedures that affected the school represented this measure of principal participation in school planning activities.

Goal consensus

This composite was based on how strongly Chapter 1 and regular teachers agreed or disagreed that the school staff shared similar goals and beliefs.

Decision-making collaboration

The same set of questions that asked whether various school policies were determined by principal and/or teachers asked principals to describe the decision-making process. Those schools in which principals and teachers shared equally in the decision-making process were considered to reflect greater decision-making collaboration. Schools in which decisions tended to rely more on principal or teacher input, and schools in which decisions tended to be made solely by principals or teachers received lower factor scores.

Staff stability

Reports from principals of fewer occurrences of teacher behaviors that reflected low morale and commitment indicated greater staff stability.

Staff influence on school policy

Schools with Chapter 1 and regular teachers who reported that they had a great deal of actual influence over various school-level policies received higher factor scores for this measure, and reports of no influence received the lowest factor scores.

Consulting other staff about evaluating student progress

This factor was based on the Chapter 1 and regular teachers' reports of the practices they employed when evaluating students' academic progress. The measure was the frequency that each school's teachers' consulted, or used information from, other Chapter 1 teachers, regular teachers, and aides when they evaluated students' academic progress.

Coordination of Chapter 1 with other school services

Three factors were developed for this variable that were based on survey data from: (a) the Chapter 1 Teachers only; (b) the Characteristics of Schools and Programs instrument only; (c) a combination of both sources. Greater levels of coordination were suggested by reports of more frequent use of various procedures to improve coordination of Chapter 1 with regular classroom instruction.

Coordination of materials

Three measures were developed for both of the subjects that were based on survey data from: (a) the Classroom Teacher Questionnaire only; (b) the Characteristics of Schools and Programs instrument only; (c) combined school means of the classroom teachers' standardized scores and the standardized measures from the Characteristics of Schools and Programs Questionnaire. The subject-specific variables were coded:

0 The classroom and Chapter 1 teachers employed different materials and instructional levels.

1 The classroom and Chapter 1 teachers employed some of the same materials and instructional levels.

2 The classroom and Chapter 1 teachers employed the same materials and instructional levels.

Support for teacher innovation

This composite was based on how strongly Chapter 1 and regular teachers agreed or disagreed that school staff supported teacher innovation and new ideas.

Staff collegiality

This composite was based on how strongly Chapter 1 and regular teachers agreed or disagreed that staff from their schools displayed cooperative and supportive behaviors.

Inservice opportunities

Schools that offered more support and opportunities for Chapter 1 and regular teacher participation in productive in-service activities had higher factor scores for this measure.

Parent involvement at school

Principal's reports of greater parent involvement across 13 separate parent-school activities received higher factor measures. The measures for schools that did not offer all 13 activities were based on the mean of the standardized scores for those parent-school activities that the school did offer.

School relationship with community

Schools with regular and Chapter 1 teachers' who indicated greater cooperation, and less conflict, between the school and its parents and school board/governing board members received higher factor scores. Principals who more strongly agreed that the community members and parents served by the school were supportive and involved had greater standardized measures. Three measures were developed for this variable that were based on survey data from: (a) the School Principal Questionnaire only; (b) the combination of Chapter 1 and regular classroom teachers only; (c) a combination of the teacher and principal sources.

Global Composite Variables

In addition to the composites listed above, several additional global composite measures were developed to represent some school structural and organizational attributes. The global composites served two purposes: (1) to provide a more wholistic interpretation of the effects of various groups of related school features referenced above, and; (2) to avoid specification of analytical models with multicollinearity among related factor measures for the school attributes. Similar to the procedures used for creating the composites mentioned referenced above, the validity of the global factor structures was confirmed by principle

component analyses with varimax rotation. Second, the mean of the combined standardized variables was computed to represent the overall school-level score. These procedures were used to develop the following global composites:

Strong collaborative leadership with shared goals

This global variable was an overall measure of each school's structural, leadership attributes. The measure was a composite of three previously developed factors: (1) principal leadership; (2) staff influence on school policy, and; (3) goal consensus. A higher factor score represented stronger collaborative principal/teacher leadership with a clear mission shared by all school staff.

Coordination of Chapter 1 with regular program

This global measure was developed for both math and R/E/LA. Confirmatory factor analysis suggested the same factor structure applied to both subjects. Specifically, this measure was a composite of three previously developed school factors: (1) consulting other staff about evaluating student progress; (2) coordination of Chapter 1 with other school services, and; (3) coordination of materials. Higher factor scores indicated greater schoolwide coordination of the instructional programs, materials, and student evaluation procedures used by Chapter 1 and other school instructional staff.

Opportunities and resources for professional development

The three composites (i.e., support for innovation, inservice opportunities, and staff collegiality) that defined the opportunities and resources for professional development school organizational attribute formed this global measure. Higher scores indicated a greater schoolwide commitment to support innovation, offer inservice opportunities, and foster teacher collegiality.

Community partnerships

Both composite factors (i.e., parent involvement at school and school relationship with community) from the community partnerships school organizational attribute comprised this global measure. Schools with higher factor measures had more positive relationships with their community members and had greater levels of parent involvement.

Categorical and Continuous Variables

Categorical and continuous variables that were developed for schools were based on single items from one particular instrument. Yearly variables were produced for both categorical and continuous variables. Yearly school variables that were derived from data from one respondent were assigned the single value that was provided. Continuous school-level variables that were based on data from more than one teacher, for instance the number of minutes of classroom math and R/E/LA instruction missed by Chapter 1 students, were computed as the mean of each school's teacher responses. Final longitudinal measures were constructed for continuous variables that were average measures across the three years.

Coding of the three dummy codes based on data from multiple teachers (i.e., shared responsibility for basic skills instruction and learning fragmentation for math and R/E/LA) depended upon the majority response from teachers within each school. For instance, if more than 50 percent of the teachers from a given school indicated that classroom and Chapter 1 teachers shared responsibility for Chapter 1 students' basic skills instruction, then that school's shared responsibility for basic skills dummy code was set to "1." If the percentage of affirmative teacher responses within a school was equal to or less than 50 percent then the dummy code was assigned a value of "0." The value of each final longitudinal dummy code was assigned the majority value of the three yearly dummy code values.

School size

This continuous variable was derived from item B-1 from the Characteristics of Schools and Programs instrument, which asked: "Approximately what is the total enrollment for the 199X-9X school year?"

Days of school

This continuous variable was based on item B-3 from the Characteristics of Schools and Programs instrument, which asked: "How many days will school be in session (teachers and students both present) this academic school year?"

Urbanicity

The urbanicity of each school was provided by the *Prospects* Survey Control File variable, URBNCTY. Three dummy codes were derived from the URBNCTY variable to indicate each school's location: urban, suburban, or rural.

Poverty level

A measure of the school poverty level was based on the percentage of students in the school who received free or reduced priced lunches. This measure was derived from the Characteristics of Schools and Programs item B-11, which asked: "Approximately what percentage of the students currently enrolled in this school are eligible to receive free or reduced price lunches?"

Racial distribution

Separate variables represented the percentage of students enrolled in each school who were of the following racial/ethnic backgrounds: Asian, African American, Hispanic, Caucasian, American Indian, and other race. These variables were based on the Characteristics of Schools and Programs item B-8, which asked: "Approximately what percentage of the students currently enrolled in this school belong to each of the following racial/ethnic groups?"

Student mobility

A measure of school-level student mobility was developed for each school that was the ratio of the number of students who permanently left the school during the school year to

the total number of students who were enrolled at the beginning of the academic year. Total enrollment was based on item B-1 from the Characteristics of Schools and Programs instrument, which asked: "Approximately what is the total enrollment for the 199X-9X school year?" The number of students who had left the school during the academic year was obtained from item B-5 from the Characteristics of Schools and Programs instrument, which stated: "Please estimate, for the 19XX-9X school year, the number of students who left your school between the date enrollment was stabilized and the last day of the school year who: (a) Transferred to another public school in your district; (b) Transferred to another public school outside your district; (c) Transferred to a nonpublic school." The sub-item "d" from item B-5 was not included in the mobility measure because these represented unclassified "other" student moves, and because this sub-item seemed to elicit several anomalous counts of student mobility. Similarly, the item B-6, concerning mobility occurring between academic years, seemed to elicit anomalous counts, which in some cases may have included students who had completed the highest grade in the school and had left. Therefore, this item was not considered to be an accurate student mobility measure.

Disciplinary policy

This measure of the extent of disciplinary actions taken by the school staff was the ratio of the number of students who were suspended, expelled, or transferred for disciplinary reasons to the total number of students who were enrolled at the beginning of the academic year. Again, total enrollment was based on item B-1 from the Characteristics of Schools and Programs instrument. Item E-1 from the Characteristics of Schools and Programs questionnaire asked for estimates for the current school year of "the number of students in your school who have been removed (temporarily or permanently) from classroom instruction for disciplinary reasons." Five separate counts were provided: (a) "Suspended in school," (b) "Suspended out of school," (c) "Transferred to another school," (d) "Expelled," and (e) "Other." The sub-item "e" from item E-1 was not included in the measure because these represented unclassified "other" student disciplinary actions, and because this sub-item seemed to elicit several unusually high counts of the number of disciplinary actions.

Learning fragmentation (instruction missed)

Two subject-specific dummy codes were constructed to indicate that students missed some amount of regular classroom instruction in R/E/LA and math while they received Chapter 1 services in the target subject. These variables were assigned a value of "1" when the classroom teacher indicated that non-Chapter 1 students were engaged in other math or R/E/LA activities when Chapter 1 students participated in compensatory services in the same subject area. This variable was based on teachers' responses to the Classroom Teacher Questionnaire items H-7 (math) and Q-7 (R/E/LA) that asked: "When students are participating in Chapter 1 (math or R/E/LA) activities, are your non-Chapter 1 students involved in other (math or R/E/LA) activities, other basic skills, or something else?" The dummy codes were set to "0" when Chapter 1 students missed "other basic skills" and/or "something else," but missed no instruction in the target subject.

Two subject-specific measures of the minutes of classroom instruction missed by Chapter 1 students were based on items H-8 (math) and Q-8 (R/E/LA) from the Classroom Teacher Questionnaire. Because classroom teachers who indicated that students missed no math or R/E/LA instruction followed a skip pattern and did not provide responses for items H-8 and Q-8, a "0," to indicate that students missed no instruction in the target subject, was imputed for these respondents.

Shared responsibility for basic skills instruction

This dummy code was based on item D-5 from the Classroom Teacher Questionnaire, which asked: "Who has primary responsibility for teaching basic skills to the Chapter 1 students?" If the classroom teacher selected response category "c," indicating that "(t)he regular classroom teacher and Chapter 1 teacher shared responsibility equally," then the dummy code was assigned a value of "1." All other non-missing responses were coded as "0."

Section 5. Hierarchical Model Method

We used hierarchical linear models (HLMs) to model individual student growth trajectories (1991-1993), school-specific effects on these growth trajectories, and the consequences of variations in school attributes for the school effects. The models were specified separately by cohort (1, 3, and 7) and by subject [math and reading/English/ language arts (R/E/LA)]. Two level analyses permitted modeling of variation in student-specific growth trajectories as a consequence of student characteristics and instructional attributes. Three-level HLMs modeled the variation of student-specific growth trajectories within schools and permitted analyses of achievement differences as a consequence of the school attributes.

Level 1: Individual Student Growth Trajectories

The level-1 analysis modeled multiwave student growth trajectories of the outcome measures. These multiple data points are considered as "nested" within individual students. Growth trajectories were fitted for each of the three grade cohorts.

The outcome measures for Cohort 3 and 7 math achievement were the CTBS/4 Total Math scale scores. Because Cohort 1 students were administered only one math subtest in 1991, Math Concepts and Applications, it was not possible to model three-year growth on the Total Math measure. Instead, the three yearly Math Concepts and Applications subtest scale scores were used as the Cohort 1 outcome measures. The three yearly CTBS/4 Total Reading scale scores were the reading achievement measures for all cohorts.

The linear model for this level of the analysis (the model for the growth trajectory) was written as

$$Y_{ijk} = \pi_{0ij} + \pi_{1ij}x_k + e_{ijk},$$

where Y_{ijk} is the outcome score for person i, in school j, at time point k, x_k is the time or wave of measurement (i.e., 1991, 1992, 1993), and e_{ijk} is a student- and time-specific residual. The growth parameters are the intercept π_{0ij} and the linear growth coefficient π_{1ij}. These coefficients have subscripts i and j because they are person-specific, that is each person i in school j may have different values of these growth parameters.

We fit a linear model to the growth trajectory because, with three waves of measurement (three time points), a more complex model cannot be estimated. Adding a third parameter would yield a perfect (and tautological) fit of the growth model to the data for each student.

Level 2: Individual and Instructional Effects on Individual Growth

The individual growth parameters became the outcome variables in the level-2 models, where they were assumed to vary across individuals depending, in part, on particular student-level characteristics including Chapter 1 participation. The purpose of considering the effect of student-level variables was two-fold. First, it was of substantive interest to document their effects on student achievement.

Second, the level-2 analysis modeled variation in student growth curves as a function of Chapter 1 participation. These models considered the impact of the program relative to student outcomes for all other nonparticipating students. Therefore, the level-2 analyses responded to the question: Does participation in Chapter 1 narrow existing achievement differences between program participants and a nationally-representative sample of non-participants? This comparison is a relatively stringent standard for evaluating Chapter 1 effectiveness relative to other potential comparisons. In addition, although these models utilized several key student background characteristics as covariates, this does not necessarily "control for" the large differences between Chapter 1 students and their more advantaged non-Chapter 1 peers.

We explored several different level-2 models in our analyses. The analyses included three categories of variables: individual student characteristics (see Section 2), instructional attributes of the relevant classes (see Section 3), and Chapter 1 participation (see Section 2). An example of a linear model for the second level of the analysis with one variable per category is written as

$$\pi_{sij} = \beta_{s0j} + \beta_{s1j}\text{INDCHAR}_{ij} + \beta_{s2j}\text{INSTRUCTION}_{ij} + \beta_{s3j}\text{CH1P}_{ij} + r_{sij},$$

where the π_{sij} are the individual-specific growth curve parameters (π_{0ij} and π_{1ij} with s=0 and s=1, respectively), INDCHAR_{ij} are individual student characteristics such as SES, race, or affective measures, INSTRUCTION_{ij} are instructional characteristics of classes attended, and CH1P_{ij} is an indicator of Chapter 1 participation, for person i in school j. The term r_{sij} is a residual.

Level 3: Impact of School Characteristics on School Effects

At level-3 it was possible to model the variation in effect sizes among schools utilizing the developed measures of the school level and Chapter 1 program characteristics described in Section 3. The level-3 models elucidated the attributes of schools and programs that tended to account for the most variation in student outcomes. Through these analyses it was our intention to provide policymakers and educators with pertinent information regarding the school and program organizational attributes and practices that are most effective in improving math and R/E/LA achievement.

We used three general predictor categories of school effects in the level-3 models. These included school compositional attributes, school structural attributes, and school organizational attributes (see Section 3). An example of a level-3 model for school j is written as

$$\beta_{stj} = \gamma_{st0} + \gamma_{st1}\text{SCHOOLCOMP}_j + \gamma_{st2}\text{SCHOOLSTR}_j + \gamma_{st3}\text{SCHOOLORG}_j + u_{stj},$$

where the γ_{stu}s reflect the relation between school characteristics and school effects, and u_{stu} is a residual. Here SCHOOLCOMP_j are measures of school compositional characteristics, SCHOOLSTR_j are measures of the factors representing school structural attributes, and SCHOOLORG_j are measures of the school organizational attributes, respectively, in school j.

Developing and Defining the Longitudinal Samples

As stated previously, the main purpose of these analyses was to investigate the associations between school and instructional characteristics and student achievement. However, the longitudinal *Prospects* sample was designed primarily to generate national estimates of student characteristics. Therefore, the *Prospects* longitudinal samples and data structure were not completely aligned with the intentions of this study. Nevertheless, the original baseline sample of schools, which was employed in our analyses, was selected to represent the nation's schools. Although missing data and the lack of analytical student and school weights may have compromised the generalizabilty of the results, the samples of students and schools provided data that were more representative of the nation than most previous studies of school effects on student achievement.

Student samples

It was not possible to include all students from the core sample for HLM analyses for three reasons. First, although efforts were made to retain as many students as possible by performing certain imputation procedures, still many students were missing values on key variables which forced their removal from the longitudinal sample. As described in Section 2, test score values were imputed for students who were missing one of three yearly scale score values on any given subtest. Further, the procedure of computing average factor scores across the three study years alleviated some of the missing data problems. If a student was missing a factor score for 1991, the student's values in 1992 and 1993 were used to compute the final average factor score. However, these two procedures did not completely rectify other missing data problems, such as entire instrument non-response.

Second, many core sample students moved to new schools after the baseline year. Although a small subsample of these students was followed, the majority of these students were dropped from the study and no further attempts were made by the data collection staff to obtain data for these "out-movers." Although a significant number of "in-mover" students were included in the 1992 sample, these students were not included to refresh the core

sample. Therefore, it would not have been appropriate to include these students in any analyses of the core sample.

Third, and perhaps most importantly, the application of three-level models to the data posed a practical problem: strictly school-specific effects on the learning growth parameters can only be estimated if one can unambiguously associate an individual with a school. Our analyses were designed to document the longitudinal effects of exposure to particular school environments. Therefore, longitudinal analyses of the associations between school attributes and student achievement included only those students who did not change schools. This sample of students most clearly supported the analytical aims of the analyses to investigate longitudinal participation within a particular school culture. Yet, as mentioned above, a substantial proportion of students in the core sample did change schools. Therefore, it was only possible to analyze school effects using the data from students who remained in the same schools over the three year period.

One final complication was restricted to the Cohort 7 student sample. Namely, only one year 3 Chapter 1 math participant had complete longitudinal data. Therefore, it was not possible to model the year 3 effect of Chapter 1 math services for Cohort 7. Also, it was not possible to model the three year participation indicators for these students, because four of the seven pattern indicators included Chapter 1 participation in year 3.

Instructional effects samples

Because these analyses were designed to reveal the effects of various regular classroom and Chapter 1 program instructional attributes, only Chapter 1 participants were included in the instructional effects samples. Only 1992 and 1993 data from the Chapter 1 and regular teachers were considered in these analyses, because our models treated instructional effects as interventions occurring after the pretest was administered in 1991. Therefore, only students who received Chapter 1 math or R/E/LA during the 1992 and 1993 years were included in these analyses. Unlike, the school effects sample, detailed below, these models included Chapter 1 participants from all Chapter 1 schools, regardless of school poverty level.

Again, as was the case with the student-level analyses, it was difficult to retain large numbers of students for the instructional models due to extensive missing data from the teacher questionnaires. All factors and variables described in Section 3, Development of Instructional Variables, were created in the manner described. However, after variable construction, it was noted that too few students had complete data to perform analyses with the full compliment of variables. Therefore, we followed two criteria in selecting a reduced core of instructional variables in order to retain larger sample sizes. First, we assessed the extent of missing data for each instructional variable. Some variables existed for substantially smaller numbers of students. This was the case especially for those variables that were included in the 1992 teacher survey instruments but omitted from the 1993

questionnaires. Those variables that existed for the greatest number of students received primary consideration for selection. Second, we attempted to select those variables that were linked to the most critical elements of the models of instruction for at-risk students implied by the revised sourcebook (Reisner and Haslam, 1992) and the systemic reform ideal. At least one composite or single-item variable was selected to represent the following Instructional Attributes: Teacher's Instructional Approach (i.e., Teacher-led, Basic-skills Oriented Approach, and Student-centered, Advanced-skills Oriented Approach), Instructional Grouping (i.e., Regular Class Formed Based on Ability, and In-Class Grouping Practices), and Instructional Resources (i.e., Opportunity to Learn/Instructional Time, and Class Size).

Because students move to new classrooms and may have different regular and Chapter 1 teachers from year to year, originally we had intended to model the effects of the 1992 and 1993 instructional variables independently, potentially as time-varying covariates. However, because of missing data problems we had to resort to using the technique described above for the student samples. Namely, we computed average factor scores across the two years, and if a student was missing an instructional factor score for 1992 or 1993, the one existing value was used to estimate the overall longitudinal measure. Although this procedure may have introduced more error than year-specific variables would have, due to extensive missing data it was not possible to perform this latter, preferred approach. The resulting overall instructional measures may be interpreted directly as the average characteristics of the instruction that the child was exposed to over the two years.

School effects samples

Many of the problems related to the retention of students in the longitudinal sample also plagued attempts to include as many schools as possible in our analyses. For instance, although the procedure of computing average factor scores across the three study years alleviated some of the missing data problems, this procedure did not solve all school-level non-response problems. Secondly, although some "out-movers" who were enrolled in new schools during 1992 and 1993 were followed by the data collection staff, these new schools contained too few sampled students to reliably estimate the within-school effects on student achievement. Consequently, it was possible to analyze only those schools that were sampled during the baseline year of the study.

Third, because the primary goal of the school-level analyses was to assess variation in the effectiveness of Chapter 1 school programs, obviously, all non-Chapter 1 schools were excluded from these analyses. A fourth problem was restricted to the Cohort 7 school sample. Because most students from Cohort 7 graduated to a high school during the ninth grade, which corresponded to year three of the study, few students from Cohort 7 remained in the same schools across the three years. Therefore, it was not possible to model the school effects on longitudinal learning for Cohort 7.

Finally, although we had intended to model the Chapter 1 effect within each school as a consequence of the school attributes, we discovered that there were not adequate numbers of Chapter 1 and non-Chapter 1 students to yield reliable within-school estimates of the Chapter 1 effect. That is, it was not possible to develop reliable within-school Chapter 1 slopes for an adequate number of schools. As an alternative strategy, we attempted to mitigate this problem by analyzing the school effects on Chapter 1 students only. Again, however, there were not large enough within-school Chapter 1 student samples to generate reliable within-school estimates.

Consequently, due to missing student and school data, it was not possible to perform three-level analyses that focused specifically on either the impact of school effects on the within-school Chapter 1 effect or on the between school Chapter 1 effects. However, there were adequate numbers of Cohort 1 and 3 high-poverty (i.e., over 50 percent poverty rate) Chapter 1 schools that contained sufficient numbers of Chapter 1 and non-Chapter 1 students to perform three-level analyses. These high-poverty schools contained large percentages of Chapter 1 students, and many of those students who did not receive the program were similarly at-risk for student failure. Therefore, our school effects models assessed the impact of the various school-level attributes on the growth rates of both Chapter 1 and non-Chapter 1 students in high-poverty schools.

As a final note, any longitudinal analyses of the impact of schools on learning growth may introduce biases in estimates of school effects because growth trajectories may not be the same for individuals who remain in the same school (stayers) as for those who move (movers). Therefore, the reader should be mindful of this caveat when interpreting the reported school effects.

Complications Due to *Prospects* Data Limitations

There were a number of issues involving the proper employment of student weights. First, the data files did not contain analytical longitudinal or cross-sectional student weights. The only weights available in the *Prospects* data files were basic design weights, which were not adjusted for non-response. Because the sampling strata were not identified in the *Prospects* data files, and because construction of sample weights was beyond the scope of this project, we did not attempt to adjust the available design weights.

The two-level HLM analyses employed the 1991 baseline student weights for Cohorts 1 and 3, and the 1992 weights for Cohort 7. The rationale for selecting the 1992 weights for Cohort 7 was that these weights were adjusted to correspond to students' 1992 mover sample status. Only a subsample of Cohort 7 mover students were followed to their new schools in 1992, therefore the design weights for these out-movers were increased so that the total weighted subsample of out-movers equalled the total sample of followed and non-followed out-movers. The 1992 out-movers who were not followed had missing 1992 and 1993 data and, consequently, these students were not eligible for test score imputation (missing test

scores were imputed for those students who had only one missing test score). The 1993 out-movers were included in our analyses as well, but use of their adjusted 1993 weights would not have been appropriate. The 1993 out-movers, who typically had two test scores but were missing the third 1993 measure, were included in the test score imputation procedures. These procedures permitted us to include many 1993 out-movers who were not followed. Because test data were imputed for both followed and non-followed out-moving students, the adjusted 1993 weights for followed out-movers were no longer accurate. Use of these weights would have overestimated the out-mover population. Therefore, we concluded that the best choice for weighting these students was to use the 1992 weights.

Weighting of schools posed other problems. Specifically, because the current HLM program does not offer a three-level weighting option, and because our samples of schools and students for the three-level analyses were quite selective, use of the available baseline student and school weights was not possible, nor was it necessarily appropriate, for the three-level analyses. Likewise, student weights were not used for the instructional effects analyses, due to unusually small and nonrepresentative samples.

Secondly, missing data produced several practical complications, which we described above. In addition, the extent of missing data may have produced non-response bias. Efforts to minimize missing data were exerted, as described above, but we were not provided the particular sampling information necessary to assess the potential extent of this bias, nor its possible impact on the final results of the analyses.

The *Prospects* data set is a valuable resource for quantitative educational research. However, the calculation of accurate longitudinal weights and the development and implementation of a sophisticated multiple imputation process are necessary to realize the full potential of these rich and complex data.

Section 6. Results of the Systemic Hierarchical Model Analyses

Two-Level Hierarchical Models of Student Background Effects

Numerous two-level models were developed for each cohort and subject. In all cases, initial unconditional models, or models without predictors, were developed. These unconditional models provide useful preliminary information, including the average initial achievement (i.e., Time 1 was coded as 0 so that average initial achievement was indicated by the intercept), the average learning or growth rate (the slope between Testing Time Point and Scale Score), the reliabilities of these coefficient estimates, and the correlations between initial achievement and learning rate. Also included are: a test of the hypothesis that all students have the same initial achievement; a hypothesis test indicating if all students have the same learning rate, and; the correlation between initial achievement and learning rates. The unconditional model serves as an analytical foundation, for if the hypotheses tests indicate no significant variation across students, there is no variance to account for with the student-level predictors.

After the unconditional models were developed, all student background characteristics except the Chapter 1 and Other Compensatory Education indicators were entered into the first series of conditional models. Predictors that were not significant predictors of either the intercept (i.e., initial achievement) or the slope (i.e., the learning rate), or both, were removed from these models. The resulting models can be considered reduced models, because they only contain significant predictors. We used stringent alpha levels, p values of less than .01, because these were weighted analyses. Once the reduced models were developed, we created two additional models that provided assessments of Chapter 1 effectiveness: one which included the Chapter 1 yearly indicators and the yearly Other Compensatory Education indicators, and; one which included the Chapter 1 participation pattern indicators along with the Other Compensatory Education indicators.

Each model is tabulated on a separate page. The models are presented by cohort and subject. The unconditional, conditional reduced, and the two Chapter 1 models are provided. To illustrate how to interpret the unconditional models, refer to the Table 6.1. The fixed effect coefficients, β_{00} and β_{10}, indicate that the average initial total reading scale score (i.e., Fall 1992 testing period for Cohort 1) was 486.45 and the learning rate was 75.83 scale scores, respectively. The relatively large t ratios indicate that these values are significantly different than 0. The row titled "random effects" provides the useful preliminary information regarding variance components. It can be seen that the total variance in initial total reading achievement is 1,519.87. The test of the hypothesis that all students have the same initial achievement can be rejected, as suggested by the significant chi-square value. The significant chi-square value of 11,461.74 for the slope indicates that learning rates varied significantly across students. These random effects tests are akin to one-way ANOVAs in which each student is considered a "condition."

Table 6.2 presents the results of a conditional reduced model for Cohort 1. Both the initial achievements and the learning rates are modelled by the fixed effect predictors. Because this is a conditioned model, the intercept for initial achievement, β_{00}, no longer represents the overall average scale score for the first test period. It represents the average initial scale score for students who were coded 0 on all of the predictors in the model (refer to Section 2 for variable coding).

Because the composite factors were standardized, a value of 0 on these measures refers to a student with a mean value. The dummy variables indicating a white student and an urban school were not included in the models. This procedure was followed so that the coefficients for the other racial background and urbanicity dummy variables would indicate the predicted scale score from a white urban student for each dummy variable. Therefore, the conditional intercept indicates the average score for a white girl (gender = 0) in an urban school with no imputed scale scores of average SES and student engagement. The coefficients are unstandardized beta values, so they are directly interpretable. For instance, if this hypothetical student were Native American instead of white, her predicted initial score would be 36.98 points lower. For the developed factors, the beta values represent the displacement score for one unit change in the variable. Because the factor scores were standardized, a unit change equals one standard deviation. Variables that were based on single items, such as the number of schools attended, were not standardized. In all cases, these variables were "centered," which permits one to interpret the intercepts and slopes in the models as those for students with an average score on the measures. Of course, the beta values for these variables represent the displacement score for one unit change in the variable expressed in its original metric.

The accompanying t ratios test the hypothesis that the beta coefficients are significantly different from 0. It can be seen that Retained, American Indian, Asian, Gender, Student Engagement, SES, and Attended Rural School all were significant predictors of the learning rates. For instance, boys grew 2.25 scale scores slower than girls, which was a significant difference, $p < .01$.

At the bottom of the table for this reduced conditional model, the proportion of variance accounted for by the model is displayed. It can be seen that 31.6 percent of the initial status variance and 15.37 percent of the learning rate variance were explained by the model. These percentages indicate the proportion of variance reduced from the unconditional models. For example, to compute the variance explained in the learning rate, we subtracted the conditional variance from the unconditional variance and divided the result by the unconditional variance.

As mentioned, because the beta coefficients are unstandardized, they are not directly comparable across the variables within models and between the various models. However, one can compute an average monthly learning rate across the period of the study for each cohort and subject. These average monthly learning rates can be used to interpret the magnitudes of the unstandardized beta coefficients. For Cohort 1, there were 20 months

between the first and final testing period, whereas, for Cohorts 3 and 7, there were 24 months across this period. One can compute the average monthly learning rate for each Cohort and subject by referring to the unconditional models and dividing the average learning rate coefficient by the total numbers of months mentioned above. For instance, from Table 6.1, one may derive an average monthly learning rate for Cohort 1 reading achievement of 3.79 scale score points by dividing the average learning rate coefficient of 75.83 by 20 months. For Cohort 7 math achievement (see Table 6.21), the average monthly learning rate is 0.34 (8.09 / 24 months).

Table 6.1 Two-Level Analysis of Student Reading Achievement (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, β_{00}	486.45	0.81	598.98	
Average learning rate, β_{10}	75.83	0.44	171.12	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Weighted Students (unweighted n=5,131)				
Student initial total reading scale score, r_{0i}	2,260.99	4,647	24,981.09	.000
Student reading learning rate, r_{1i}	466.94	4,647	11,461.74	.000
Level-1 error, e_{ti}	671.21			
Reliability of Coefficient Estimates				
Initial total reading scale score, π_{0i}	.72			
Reading learning rate, π_{1i}	.51			
Correlation of Initial Scale Score with Learning Rate	-.09			

Table 6.2 Two-Level Analysis of Student Reading Achievement (Cohort 1 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	481.78	1.78		
Retained, β_{01}	-36.98	4.30	-8.60	**
American Indian, β_{02}	11.58	5.13	2.26	
Asian, β_{03}	-19.14	3.67	-5.22	**
African American, β_{04}	-21.45	2.40	-8.93	**
Latino, β_{05}	-25.65	2.85	-9.00	**
Other race, β_{06}	-8.97	8.70	-1.03	
Gender, β_{07}	1.33	1.45	0.92	
Student engagement, β_{08}	29.65	1.21	24.51	**
SES, β_{09}	10.48	1.10	9.55	**
Attended suburban school, β_{010}	4.76	1.95	2.44	
Attended rural school, β_{011}	7.74	1.81	4.27	**
1991 imputed score, β_{012}	-9.17	3.17	-2.89	*
1992 imputed score, β_{013}	3.95	3.04	1.30	
1993 imputed score, β_{014}	-6.09	3.25	-1.88	
Model for learning rate, π_{1i}				
Intercept, β_{10}	77.37	1.09		
Retained, β_{11}	-9.77	2.59	-3.78	**
American Indian, β_{12}	-13.25	2.97	-4.46	**
Asian, β_{13}	6.37	2.24	2.85	*
African American, β_{14}	2.64	1.47	1.80	
Latino, β_{15}	3.66	1.73	2.11	
Other race, β_{16}	-2.72	5.36	-0.51	
Gender, β_{17}	-2.25	0.87	-2.60	*
Student engagement, β_{18}	11.02	0.72	15.22	**
SES, β_{19}	2.11	0.66	3.22	*
Attended suburban school, β_{110}	-2.83	1.18	-2.39	
Attended rural school, β_{111}	-3.68	1.10	-3.33	**
1991 imputed score, β_{112}	0.42	1.92	0.22	
1992 imputed score, β_{113}	-3.21	1.83	-1.75	
1993 imputed score, β_{114}	3.06	1.94	1.58	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	2,260.99	466.94
Conditional	1,547.17	395.16
Proportion of variance explained	31.6	15.37

NOTE: * $p < .01$, ** $p < .001$

Table 6.3 Two-Level Analysis of Student Reading Achievement (Cohort 1 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	485.77	1.81		
Retained, β_{01}	-36.60	4.32	-8.47	**
American Indian, β_{02}	12.61	5.08	2.48	*
Asian, β_{03}	-19.36	3.63	-5.33	**
African American, β_{04}	-20.40	2.38	-8.55	**
Latino, β_{05}	-23.80	2.83	-8.40	**
Other race, β_{06}	-7.96	8.62	-0.92	
Gender, β_{07}	1.37	1.44	0.96	
Student engagement, β_{08}	25.89	1.25	20.66	**
SES, β_{09}	8.48	1.11	7.66	**
Attended suburban school, β_{010}	4.77	1.94	2.46	*
Attended rural school, β_{011}	9.01	1.80	5.00	**
1991 imputed score, β_{012}	-9.79	3.14	-3.12	*
1992 imputed score, β_{013}	3.42	3.01	1.14	
1993 imputed score, β_{014}	-6.72	3.22	-2.09	
1992 Chapter 1 participant, β_{015}	-11.38	2.34	-4.87	**
1993 Chapter 1 participant, β_{016}	-14.80	2.47	-6.00	**
1992 Other compensatory educ. participant, β_{017}	1.66	3.41	0.49	
1993 Other compensatory educ. participant, β_{018}	-5.46	3.02	-1.81	
Model for learning rate, π_{1i}				
Intercept, β_{10}	79.08	1.11		
Retained, β_{11}	-11.47	2.60	-4.40	**
American Indian, β_{12}	-13.61	2.95	-4.62	**
Asian, β_{13}	6.07	2.22	2.74	*
African American, β_{14}	2.64	1.46	1.80	
Latino, β_{15}	3.72	1.73	2.15	
Other race, β_{16}	-3.12	5.31	-0.59	
Gender, β_{17}	-2.24	0.86	-2.61	*
Student engagement, β_{18}	9.92	0.75	13.23	**
SES, β_{19}	1.66	0.66	2.50	*
Attended suburban school, β_{110}	-3.54	1.18	-3.01	*
Attended rural school, β_{111}	-3.53	1.10	-3.21	*
1991 imputed score, β_{112}	0.31	1.90	0.16	
1992 imputed score, β_{113}	-3.29	1.81	-1.81	
1993 imputed score, β_{114}	3.33	1.93	1.73	
1992 Chapter 1 participant, β_{115}	3.44	1.43	2.40	
1993 Chapter 1 participant, β_{116}	-8.78	1.51	-5.80	**
1992 Other compensatory educ. participant, β_{117}	1.82	2.09	0.87	
1993 Other compensatory educ. participant, β_{118}	-12.34	1.82	-6.77	**

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	2260.99	466.94
Conditional	1502.16	382.72
Proportion of variance explained	33.56	18.04

NOTE: * $p < .01$, ** $p < .001$

Table 6.4 Two-Level Analysis of Student Reading Achievement (Cohort 1 Model with Student Background Attributes and Chapter 1 Participation Pattern Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	486.17	1.81		
Retained, β_{01}	-35.19	4.33	-8.13	**
American Indian, β_{02}	13.01	5.07	2.57	*
Asian, β_{03}	-19.10	3.63	-5.27	**
African American, β_{04}	-19.92	2.38	-8.35	**
Latino, β_{05}	-23.70	2.83	-8.38	**
Other race, β_{06}	-7.93	8.61	-0.92	
Gender, β_{07}	1.29	1.43	0.90	
Student engagement, β_{08}	25.74	1.25	20.56	**
SES, β_{09}	8.19	1.11	7.40	**
Attended suburban school, β_{010}	5.21	1.94	2.69	*
Attended rural school, β_{011}	9.14	1.80	5.08	**
1991 imputed score, β_{012}	-10.00	3.14	-3.19	*
1992 imputed score, β_{013}	3.22	3.01	1.07	
1993 imputed score, β_{014}	-7.11	3.22	-2.21	
Chapter 1 pattern 10, β_{015}	-17.55	2.81	-6.26	**
Chapter 1 pattern 01, β_{016}	-22.75	3.18	-7.16	**
Chapter 1 pattern 11, β_{017}	-20.79	3.08	-6.76	**
1992 Other compensatory educ. participant, β_{018}	2.00	3.41	0.59	
1993 Other compensatory educ. participant, β_{019}	-5.22	3.02	-1.73	
Model for learning rate, π_{1i}				
Intercept, β_{10}	78.95	1.11		
Retained, β_{11}	-11.99	2.61	-4.59	**
American Indian, β_{12}	-13.82	2.94	-4.70	**
Asian, β_{13}	5.96	2.22	2.69	*
African American, β_{14}	2.48	1.46	1.69	
Latino, β_{15}	3.68	1.72	2.14	*
Other race, β_{16}	-3.17	5.31	-0.60	
Gender, β_{17}	-2.20	0.86	-2.57	*
Student engagement, β_{18}	9.98	0.75	13.32	**
SES, β_{19}	1.77	0.66	2.66	**
Attended suburban school, β_{110}	-3.72	1.18	-3.16	*
Attended rural school, β_{111}	-3.59	1.10	-3.27	*
1991 imputed score, β_{112}	0.37	1.90	0.19	
1992 imputed score, β_{113}	-3.21	1.81	-1.77	
1993 imputed score, β_{114}	3.47	1.92	1.80	
Chapter 1 pattern 10, β_{115}	5.78	1.72	3.37	**
Chapter 1 pattern 01, β_{116}	-5.79	1.94	-2.99	*
Chapter 1 pattern 11, β_{117}	-7.53	1.91	-3.94	**
1992 Other compensatory educ. participant, β_{118}	1.66	2.09	0.80	
1993 Other compensatory educ. participant, β_{119}	-12.41	1.82	-6.81	**

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	2260.99	466.94
Conditional	1494.72	381.01
Proportion of variance explained	33.90	18.40

NOTE: * $p < .01$, ** $p < .001$

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Table 6.5 Two-Level Analysis of Student Math Achievement (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial math concepts/applications scale score, β_{00}	488.34	0.94	518.10	
Average learning rate, β_{10}	74.04	0.44	167.78	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Weighted Students (unweighted n=4,565)				
Student initial math concepts/applications scale score, r_{0i}	3,013.73	4,564	24,078.80	.000
Student math learning rate, r_{1i}	342.08	4,564	7,405.79	.000
Level-1 error, e_{ti}	877.76			
Reliability of Coefficient Estimates				
Initial math concepts/applications scale score, π_{0i}	.73			
Math learning rate, π_{1i}	.39			
Correlation of Initial Scale Score with Learning Rate	-.32			

Table 6.6 Two-Level Analysis of Student Math Achievement (Cohort 1 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0i}				
Intercept, β_{00}	480.82	2.02		
Retained, β_{01}	-46.92	4.77	-9.83	**
American Indian, β_{02}	5.35	5.78	0.93	
Asian, β_{03}	-4.29	4.20	-1.02	
African American, β_{04}	-31.03	2.68	-11.58	**
Latino, β_{05}	-23.32	3.19	-7.32	**
Other race, β_{06}	-11.37	9.84	-1.16	
Gender, β_{07}	12.30	1.65	7.48	**
Student engagement, β_{08}	36.43	1.37	26.50	**
SES, β_{09}	12.26	1.24	9.89	**
Attended suburban school, β_{010}	-1.84	2.19	-0.84	
Attended rural school, β_{011}	5.39	2.06	2.61	*
1991 imputed score, β_{012}	-9.31	4.13	-2.25	
1992 imputed score, β_{013}	-3.73	3.28	-1.14	
1993 imputed score, β_{014}	-2.09	3.75	-0.56	
Model for learning rate, π_{1i}				
Intercept, β_{10}	74.48	1.14		
Retained, β_{11}	-0.50	2.62	-0.19	
American Indian, β_{12}	-11.55	2.98	-3.88	**
Asian, β_{13}	9.59	2.36	4.06	**
African American, β_{14}	3.69	1.50	2.45	*
Latino, β_{15}	0.82	1.76	0.47	
Other race, β_{16}	0.50	5.61	0.09	
Gender, β_{17}	1.06	0.89	1.19	
Student engagement, β_{18}	3.23	0.75	4.32	**
SES, β_{19}	2.36	0.67	3.51	**
Attended suburban school, β_{110}	-1.71	1.22	-1.41	
Attended rural school, β_{111}	-4.15	1.15	-3.60	**
1991 imputed score, β_{112}	-0.81	2.27	-0.36	
1992 imputed score, β_{113}	-1.67	1.81	-0.92	
1993 imputed score, β_{114}	0.90	2.03	0.42	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	3,013.73	342.08
Conditional	1,937.05	329.37
Proportion of variance explained	35.73	3.72

NOTE: * $p < .01$, ** $p < .001$

Table 6.7 Two-Level Analysis of Student Math Achievement (Cohort 1 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0i}				
Intercept, β_{00}	482.53	2.02		
Retained, β_{01}	-46.21	4.76	-9.70	**
American Indian, β_{02}	4.65	5.76	0.81	
Asian, β_{03}	-4.80	4.18	-1.15	
African American, β_{04}	-30.92	2.68	-11.55	**
Latino, β_{05}	-23.45	3.18	-7.38	**
Other race, β_{06}	-11.83	9.80	-1.21	
Gender, β_{07}	12.29	1.64	7.50	**
Student engagement, β_{08}	35.54	1.38	25.80	**
SES, β_{09}	11.40	1.24	9.19	**
Attended suburban school, β_{010}	-1.76	2.20	-0.80	
Attended rural school, β_{011}	5.75	2.06	2.79	*
1991 imputed score, β_{012}	-10.04	4.12	-2.44	
1992 imputed score, β_{013}	-3.70	3.27	-1.13	
1993 imputed score, β_{014}	-2.34	3.74	-0.63	
1992 Chapter 1 participant, β_{015}	-22.81	4.48	-5.09	**
1993 Chapter 1 participant, β_{016}	-7.61	6.28	-1.21	
1992 Other compensatory educ. participant, β_{017}	-10.55	5.64	-1.87	
1993 Other compensatory educ. participant, β_{018}	-10.46	5.04	-2.08	
Model for learning rate, π_{1i}				
Intercept, β_{10}	74.44	1.15		
Retained, β_{11}	-0.72	2.63	-0.28	
American Indian, β_{12}	-10.97	2.98	-3.69	**
Asian, β_{13}	9.84	2.36	4.17	**
African American, β_{14}	4.08	1.51	2.71	*
Latino, β_{15}	1.11	1.76	0.63	
Other race, β_{16}	0.76	5.60	0.14	
Gender, β_{17}	0.98	0.89	1.11	
Student engagement, β_{18}	3.12	0.75	4.15	**
SES, β_{19}	2.48	0.68	3.67	**
Attended suburban school, β_{110}	-2.07	1.22	-1.69	
Attended rural school, β_{111}	-4.42	1.15	-3.83	**
1991 imputed score, β_{112}	-0.83	2.27	-0.37	
1992 imputed score, β_{113}	-1.77	1.81	-0.98	
1993 imputed score, β_{114}	0.82	2.02	0.40	
1992 Chapter 1 participant, β_{115}	2.38	2.55	0.93	
1993 Chapter 1 participant, β_{116}	-11.23	3.81	-2.95	*
1992 Other compensatory educ. participant, β_{117}	10.92	3.35	3.26	*
1993 Other compensatory educ. participant, β_{118}	3.84	2.77	1.39	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	3,013.73	342.08
Conditional	1,913.79	328.77
Proportion of variance explained	36.50	3.89

NOTE: * $p < .01$, ** $p < .001$

Table 6.8 Two-Level Analysis of Student Math Achievement (Cohort 1 Model with Student Background Attributes and Chapter 1 Participation Pattern Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0i}				
Intercept, β_{00}	482.52	2.02		
Retained, β_{01}	-46.19	4.76	-9.70	**
American Indian, β_{02}	4.64	5.76	0.81	
Asian, β_{03}	-4.85	4.18	-1.16	
African American, β_{04}	-30.98	2.68	-11.57	**
Latino, β_{05}	-23.54	3.18	-7.40	**
Other race, β_{06}	-11.88	9.80	-1.21	
Gender, β_{07}	12.30	1.64	7.51	**
Student engagement, β_{08}	35.52	1.38	25.78	**
SES, β_{09}	11.44	1.24	9.21	**
Attended suburban school, β_{010}	-1.79	2.20	-0.81	
Attended rural school, β_{011}	5.72	2.06	2.77	*
1991 imputed score, β_{012}	-10.00	4.12	-2.43	
1992 imputed score, β_{013}	-3.72	3.27	-1.14	
1993 imputed score, β_{014}	-2.34	3.74	-0.63	
Chapter 1 pattern 10, β_{015}	-21.62	4.80	-4.50	**
Chapter 1 pattern 01, β_{016}	-4.57	7.63	-0.60	
Chapter 1 pattern 11, β_{017}	-35.43	9.90	-3.58	**
1992 Other compensatory educ. participant, β_{018}	-10.55	5.64	-1.87	
1993 Other compensatory educ. participant, β_{019}	-10.25	5.04	-2.03	
Model for learning rate, π_{1i}				
Intercept, β_{10}	74.45	1.15		
Retained, β_{11}	-0.73	2.63	-0.28	
American Indian, β_{12}	-10.97	2.98	-3.69	**
Asian, β_{13}	9.85	2.36	4.18	**
African American, β_{14}	4.10	1.51	2.72	*
Latino, β_{15}	1.14	1.76	0.65	
Other race, β_{16}	0.77	5.60	0.14	
Gender, β_{17}	0.98	0.89	1.10	
Student engagement, β_{18}	3.13	0.75	4.16	**
SES, β_{19}	2.47	0.68	3.64	**
Attended suburban school, β_{110}	-2.06	1.22	-1.69	
Attended rural school, β_{111}	-4.41	1.15	-3.82	**
1991 imputed score, β_{112}	-0.85	2.27	-0.37	
1992 imputed score, β_{113}	-1.76	1.81	-0.98	
1993 imputed score, β_{114}	0.82	2.02	0.40	
Chapter 1 pattern 10, β_{115}	1.93	2.70	0.71	
Chapter 1 pattern 01, β_{116}	-12.54	4.68	-2.68	*
Chapter 1 pattern 11, β_{117}	-6.76	5.93	-1.14	
1992 Other compensatory educ. participant, β_{118}	10.92	3.35	3.26	*
1993 Other compensatory educ. participant, β_{119}	3.74	2.78	1.35	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	3,013.73	342.08
Conditional	1,913.78	328.70
Proportion of variance explained	36.50	3.91

NOTE: * $p < .01$, ** $p < .001$

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Table 6.9 Two-Level Analysis of Student Reading Achievement (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, β_{00}	679.79	0.72	942.43	
Average learning rate, β_{10}	15.24	0.26	58.48	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Weighted Students (unweighted n=4,306)				
Student initial total reading scale score, r_{0i}	1,793.57	3,874	35,211.56	.000
Student reading learning rate, r_{1i}	109.67	3,874	7,391.22	.000
Level-1 error, e_{ti}	275.43			
Reliability of Coefficient Estimates				
Initial total reading scale score, π_{0i}	.85			
Reading learning rate, π_{1i}	.41			
Correlation of Initial Scale Score with Learning Rate	-.15			

Table 6.10 Two-Level Analysis of Student Reading Achievement (Cohort 3 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	677.18	1.60		
Retained, β_{01}	-33.91	5.01	-6.77	**
American Indian, β_{02}	-1.81	4.11	-0.44	
Asian, β_{03}	0.88	2.40	0.37	
African American, β_{04}	-14.20	1.84	-7.70	**
Latino, β_{05}	-10.32	1.80	-5.73	**
Other race, β_{06}	1.93	5.57	0.35	
Gender, β_{07}	0.17	1.11	0.15	
Student engagement, β_{08}	17.99	1.07	16.80	**
Reading self-efficacy, β_{09}	25.26	1.29	19.62	**
Locus of control, β_{010}	22.57	1.57	14.38	**
Number of schools attended, β_{011}	-2.01	0.60	-3.37	**
Attitude toward school, β_{012}	-7.56	1.38	-5.69	**
SES, β_{013}	8.97	0.86	10.38	**
Attended suburban school, β_{014}	1.03	1.44	0.72	
Attended rural school, β_{015}	2.95	1.31	2.24	
1991 imputed score, β_{016}	2.05	1.93	1.06	
1992 imputed score, β_{017}	-6.47	1.83	-3.53	**
1993 imputed score, β_{018}	-2.01	2.43	-0.83	
Model for learning rate, π_{1i}				
Intercept, β_{10}	13.70	0.81		
Retained, β_{11}	8.18	2.56	3.20	**
American Indian, β_{12}	-6.36	1.93	-3.30	**
Asian, β_{13}	2.51	1.20	2.10	
African American, β_{14}	-2.64	0.95	-2.78	**
Latino, β_{15}	-0.10	0.93	-0.11	
Other race, β_{16}	0.56	2.78	0.20	
Gender, β_{17}	0.33	0.55	0.61	
Reading self-efficacy, β_{18}	-2.77	0.64	-4.32	**
Locus of control, β_{19}	1.61	0.78	2.07	
Number of schools attended, β_{110}	0.56	0.30	1.85	
Attitude toward school, β_{111}	2.04	0.65	3.12	*
Student engagement, β_{112}	2.04	0.53	3.85	**
SES, β_{113}	0.88	0.43	2.07	
Attended suburban school, β_{114}	-0.13	0.72	-0.18	
Attended rural school, β_{115}	0.60	0.66	0.91	
1991 imputed score, β_{116}	-1.49	0.92	-1.63	
1992 imputed score, β_{117}	3.01	0.90	3.34	**
1993 imputed score, β_{118}	0.71	1.21	0.59	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1793.57	109.67
Conditional	793.39	104.67
Proportion of variance explained	55.76	5.00

NOTE: * $p < .01$, ** $p < .001$

Table 6.11 Two-Level Analysis of Student Reading Achievement (Cohort 3 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	682.76	1.60		
Retained, β_{01}	-29.52	4.90	-6.03	**
American Indian, β_{02}	1.03	4.00	0.26	
Asian, β_{03}	0.56	2.34	0.24	
African American, β_{04}	-10.89	1.81	-6.01	**
Latino, β_{05}	-7.33	1.78	-4.11	**
Other race, β_{06}	0.39	5.42	0.07	
Gender, β_{07}	-0.29	1.08	-0.27	
Student engagement, β_{08}	15.73	1.05	14.98	**
Reading self-efficacy, β_{09}	22.36	1.26	17.63	**
Locus of control, β_{010}	20.09	1.54	13.09	**
Number of schools attended, β_{011}	-2.03	0.58	-3.50	**
Attitude toward school, β_{012}	-6.92	1.29	-5.35	**
SES, β_{013}	7.03	0.85	8.28	**
Attended suburban school, β_{014}	-0.99	1.41	-0.71	
Attended rural school, β_{015}	4.04	1.28	3.14	*
1991 imputed score, β_{016}	0.79	1.88	0.42	
1992 imputed score, β_{017}	-8.51	1.79	-4.76	**
1993 imputed score, β_{018}	0.21	2.37	0.09	
1991 Chapter 1 participant, β_{019}	-9.26	1.61	-5.75	**
1992 Chapter 1 participant, β_{020}	-12.58	2.06	-6.10	**
1993 Chapter 1 participant, β_{021}	-8.22	2.15	-3.83	**
1991 Other compensatory educ. participant, β_{022}	-5.04	2.93	-1.72	
1992 Other compensatory educ. participant, β_{023}	-8.46	2.99	-2.83	*
1993 Other compensatory educ. participant, β_{024}	-12.17	3.68	-3.31	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	13.60	0.82		
Retained, β_{11}	7.89	2.57	3.07	*
American Indian, β_{12}	-6.32	1.93	-3.27	**
Asian, β_{13}	2.44	1.20	2.00	
African American, β_{14}	-2.72	0.96	-2.85	*
Latino, β_{15}	0.17	0.94	0.18	
Other race, β_{16}	0.67	2.78	0.24	
Gender, β_{17}	0.36	0.55	0.65	
Student engagement, β_{18}	2.09	0.54	3.90	**
Reading self-efficacy, β_{19}	-2.75	0.65	-4.23	**
Locus of control, β_{110}	1.63	0.78	2.08	
Number of schools attended, β_{111}	0.58	0.30	1.95	
Attitude toward school, β_{112}	2.06	0.66	3.15	*
SES, β_{113}	0.93	0.43	2.16	
Attended suburban school, β_{114}	-0.18	0.72	-0.25	
Attended rural school, β_{115}	0.50	0.66	0.76	
1991 imputed score, β_{116}	-1.47	0.92	-1.61	
1992 imputed score, β_{117}	3.05	0.90	3.38	**
1993 imputed score, β_{118}	0.61	1.21	0.51	
1991 Chapter 1 participant, β_{119}	0.43	0.84	0.51	
1992 Chapter 1 participant, β_{120}	1.65	1.08	1.52	
1993 Chapter 1 participant, β_{121}	-1.87	1.14	-1.64	
1991 Other compensatory educ. participant, β_{122}	-2.95	1.52	-1.94	
1992 Other compensatory educ. participant, β_{123}	1.36	1.61	0.84	
1993 Other compensatory educ. participant, β_{124}	1.70	1.86	0.91	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1793.57	109.67
Conditional	732.82	103.99
Proportion of variance explained	59.14	5.18

NOTE: * $p < .01$, ** $p < .001$

Table 6.12 Two-Level Analysis of Student Reading Achievement (Cohort 3 Model with Student Background Attributes and Chapter 1 Participation Pattern Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	682.73	1.60		
Retained, β_{01}	-29.56	4.91	-6.03	**
American Indian, β_{02}	0.63	4.01	0.16	
Asian, β_{03}	0.60	2.34	0.26	
African American, β_{04}	-11.05	1.82	-6.08	**
Latino, β_{05}	-7.30	1.79	-4.07	**
Other race, β_{06}	0.50	5.42	0.09	
Gender, β_{07}	-0.26	1.08	-0.24	
Student engagement, β_{08}	15.89	1.05	15.09	**
Reading self-efficacy, β_{09}	22.30	1.27	17.56	**
Locus of control, β_{010}	20.17	1.54	13.13	**
Number of schools attended, β_{011}	-2.03	0.58	-3.49	**
Attitude toward school, β_{012}	-6.93	1.29	-5.36	**
SES, β_{013}	7.05	0.85	8.28	**
Attended suburban school, β_{014}	-1.18	1.42	-0.83	
Attended rural school, β_{015}	3.98	1.29	3.09	*
1991 imputed score, β_{016}	0.73	1.88	0.39	
1992 imputed score, β_{017}	-8.54	1.79	-4.77	**
1993 imputed score, β_{018}	0.28	2.37	0.12	
Chapter 1 pattern 100, β_{019}	-9.59	1.98	-4.85	**
Chapter 1 pattern 010, β_{020}	-8.93	3.64	-2.45	*
Chapter 1 pattern 001, β_{021}	-9.13	3.90	-2.34	
Chapter 1 pattern 110, β_{022}	-20.89	3.05	-6.85	**
Chapter 1 pattern 101, β_{023}	-7.87	4.63	-1.70	
Chapter 1 pattern 011, β_{024}	-19.97	2.23	-6.85	**
Chapter 1 pattern 111, β_{025}	-32.93	2.86	-11.51	**
1991 Other compensatory educ. participant, β_{026}	-5.36	2.94	-1.82	
1992 Other compensatory educ. participant, β_{027}	-8.84	3.01	-2.93	**
1993 Other compensatory educ. participant, β_{028}	-11.69	3.69	-3.17	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	13.78	0.82		
Retained, β_{11}	7.40	2.57	2.88	*
American Indian, β_{12}	-5.86	1.93	-3.03	*
Asian, β_{13}	2.34	1.20	1.96	
African American, β_{14}	-2.53	0.96	-2.64	*
Latino, β_{15}	0.34	0.94	0.36	
Other race, β_{16}	0.46	2.77	0.17	
Gender, β_{17}	0.33	0.55	0.61	
Student engagement, β_{18}	2.00	0.54	3.73	**
Reading self-efficacy, β_{19}	-2.78	0.65	-4.28	**
Locus of control, β_{110}	1.64	0.78	2.09	
Number of schools attended, β_{111}	0.61	0.30	2.02	
Attitude toward school, β_{112}	2.09	0.66	3.19	*
SES, β_{113}	0.84	0.43	1.96	
Attended suburban school, β_{114}	-0.18	0.73	-0.25	
Attended rural school, β_{115}	0.57	0.66	0.87	
1991 imputed score, β_{116}	-1.55	0.92	-1.69	
1992 imputed score, β_{117}	2.99	0.90	3.31	**
1993 imputed score, β_{118}	0.54	1.21	0.45	
Chapter 1 pattern 100, β_{119}	-1.11	1.02	-1.09	
Chapter 1 pattern 010, β_{120}	1.59	1.90	0.84	
Chapter 1 pattern 001, β_{121}	-4.56	2.08	-2.19	
Chapter 1 pattern 110, β_{122}	2.00	1.59	1.25	
Chapter 1 pattern 101, β_{123}	-2.84	2.42	-1.18	
Chapter 1 pattern 011, β_{124}	-2.64	1.76	-1.51	
Chapter 1 pattern 111, β_{125}	2.77	1.52	1.83	
1991 Other compensatory educ. participant, β_{126}	-2.67	1.52	-1.75	
1992 Other compensatory educ. participant, β_{127}	1.47	1.61	0.91	
1993 Other compensatory educ. participant, β_{128}	1.29	1.86	0.69	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1793.57	109.67
Conditional	732.52	103.37
Proportion of variance explained	59.16	5.74

NOTE: * $p < .01$, ** $p < .001$

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Table 6.13 Two-Level Analysis of Student Math Achievement (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total math scale score, β_{00}	681.10	0.70	968.00	
Average learning rate, β_{10}	21.10	0.27	76.96	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Weighted Students (unweighted n=3,614)				
Student initial total math scale score, r_{0i}	1,519.87	3,613	29,874.18	.000
Student math learning rate, r_{1i}	124.61	3,613	7,317.56	.000
Level-1 error, e_{ti}	257.37			
Reliability of Coefficient Estimates				
Initial total math scale score, π_{0i}	.84			
Math learning rate, π_{1i}	.46			
Correlation of Initial Scale Score with Learning Rate	-.33			

Table 6.14 Two-Level Analysis of Student Math Achievement (Cohort 3 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	675.71	1.59		
Retained, β_{01}	-28.70	4.81	-5.96	**
American Indian, β_{02}	-11.11	4.17	-2.67	*
Asian, β_{03}	13.02	2.36	5.52	**
African American, β_{04}	-14.09	1.93	-7.28	**
Latino, β_{05}	-7.43	1.79	-4.14	**
Other race, β_{06}	9.16	5.64	1.62	
Gender, β_{07}	6.41	1.14	5.63	**
Student engagement, β_{08}	25.36	1.10	23.15	**
Math self-efficacy, β_{09}	12.31	1.21	10.21	**
Locus of control, β_{010}	17.52	1.58	11.10	**
Number of schools attended, β_{011}	-1.95	0.60	-3.24	*
Attitude toward school, β_{012}	-1.09	1.37	-0.80	
SES, β_{013}	4.91	0.87	5.66	**
Attended suburban school, β_{014}	0.30	1.49	0.20	
Attended rural school, β_{015}	1.02	1.31	0.78	
1991 imputed score, β_{016}	1.00	1.85	0.54	
1992 imputed score, β_{017}	-9.19	1.81	-5.08	**
1993 imputed score, β_{018}	2.08	2.54	0.82	
Model for learning rate, π_{1i}				
Intercept, β_{10}	20.59	0.83		
Retained, β_{11}	1.90	2.52	0.76	
American Indian, β_{12}	2.08	2.03	1.02	
Asian, β_{13}	1.60	1.22	1.32	
African American, β_{14}	1.75	1.03	1.70	
Latino, β_{15}	2.25	0.95	2.37	
Other race, β_{16}	1.09	2.90	0.38	
Gender, β_{17}	-2.59	0.58	-4.45	**
Math self-efficacy, β_{18}	-0.06	0.56	-0.11	
Locus of control, β_{19}	-1.31	0.62	-2.12	
Number of schools attended, β_{110}	-0.72	0.81	-0.88	
Attitude toward school, β_{111}	0.51	0.31	1.62	
Student engagement, β_{112}	1.89	0.70	2.70	*
SES, β_{113}	0.98	0.44	2.21	
Attended suburban school, β_{114}	0.52	0.77	0.67	
Attended rural school, β_{115}	0.67	0.68	0.99	
1991 imputed score, β_{116}	-2.42	0.91	-2.65	*
1992 imputed score, β_{117}	3.02	0.93	3.27	**
1993 imputed score, β_{118}	-0.57	1.30	-0.44	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1,519.87	124.61
Conditional	759.93	119.92
Proportion of variance explained	50.00	3.76

NOTE: * $p < .01$, ** $p < .001$

Table 6.15 Two-Level Analysis of Student Math Achievement (Cohort 3 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	677.46	1.59		
Retained, β_{01}	-26.38	4.78	-5.51	**
American Indian, β_{02}	-11.16	4.12	-2.71	*
Asian, β_{03}	13.35	2.33	5.72	**
African American, β_{04}	-11.42	1.95	-5.85	**
Latino, β_{05}	-6.65	1.80	-3.71	**
Other race, β_{06}	8.87	5.59	1.59	
Gender, β_{07}	5.82	1.13	5.15	**
Student engagement, β_{08}	23.86	1.10	21.73	**
Math self-efficacy, β_{09}	12.42	1.20	10.39	**
Locus of control, β_{010}	16.76	1.57	10.39	**
Number of schools attended, β_{011}	-1.92	0.60	-3.21	*
Attitude toward school, β_{012}	-1.29	1.35	-0.95	
SES, β_{013}	4.08	0.86	4.73	**
Attended suburban school, β_{014}	-0.14	1.48	-0.09	
Attended rural school, β_{015}	2.14	1.30	1.64	
1991 imputed score, β_{016}	0.52	1.83	0.28	
1992 imputed score, β_{017}	-9.43	1.79	-5.26	**
1993 imputed score, β_{018}	2.44	2.52	0.97	
1991 Chapter 1 participant, β_{019}	-5.37	2.00	-2.68	*
1992 Chapter 1 participant, β_{020}	-11.48	2.79	-4.11	**
1993 Chapter 1 participant, β_{021}	-9.21	4.11	-2.24	
1991 Other compensatory educ. participant, β_{022}	-9.33	3.58	-2.61	*
1992 Other compensatory educ. participant, β_{023}	-4.71	3.31	-1.42	
1993 Other compensatory educ. participant, β_{024}	-13.18	4.73	-2.79	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	20.28	0.84		
Retained, β_{11}	1.21	2.53	0.48	
American Indian, β_{12}	1.93	2.03	0.95	
Asian, β_{13}	1.53	1.22	1.26	
African American, β_{14}	1.06	1.04	1.02	
Latino, β_{15}	2.14	0.96	2.22	
Other race, β_{16}	1.16	2.90	0.40	
Gender, β_{17}	-2.51	0.58	-4.31	**
Student engagement, β_{18}	0.16	0.57	0.28	
Math self-efficacy, β_{19}	-1.37	0.62	-2.21	
Locus of control, β_{110}	-0.58	0.81	-0.72	
Number of schools attended, β_{111}	0.51	0.31	1.66	
Attitude toward school, β_{112}	1.88	0.70	2.69	*
SES, β_{113}	1.13	0.45	2.55	*
Attended suburban school, β_{114}	0.67	0.77	0.87	
Attended rural school, β_{115}	0.42	0.68	0.62	
1991 imputed score, β_{116}	-2.33	0.91	-2.54	*
1992 imputed score, β_{117}	3.23	0.93	3.49	**
1993 imputed score, β_{118}	-0.69	1.30	-0.53	
1991 Chapter 1 participant, β_{119}	1.92	1.06	1.82	
1992 Chapter 1 participant, β_{120}	3.76	1.48	2.54	*
1993 Chapter 1 participant, β_{121}	0.58	2.24	0.26	
1991 Other compensatory educ. participant, β_{122}	-3.09	1.88	-1.64	
1992 Other compensatory educ. participant, β_{123}	0.14	1.84	0.07	
1993 Other compensatory educ. participant, β_{124}	2.79	2.46	1.13	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1,519.87	124.61
Conditional	739.26	119.25
Proportion of variance explained	51.36	4.30

NOTE: * $p < .01$, ** $p < .001$

Table 6.16 Two-Level Analysis of Student Math Achievement (Cohort 3 Model with Student Background Attributes and Chapter 1 Participation Pattern Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	677.51	1.60		
Retained, β_{01}	-26.48	4.79	-5.53	**
American Indian, β_{02}	-11.17	4.12	-2.71	*
Asian, β_{03}	13.34	2.34	5.71	**
African American, β_{04}	-11.53	1.96	-5.90	**
Latino, β_{05}	-6.65	1.80	-3.70	**
Other race, β_{06}	8.88	5.59	1.59	
Gender, β_{07}	5.82	1.13	5.16	**
Student engagement, β_{08}	23.83	1.10	21.66	**
Math self-efficacy, β_{09}	12.47	1.20	10.41	**
Locus of control, β_{010}	16.72	1.57	10.65	**
Number of schools attended, β_{011}	-1.92	0.60	-3.20	*
Attitude toward school, β_{012}	-1.29	1.36	-0.95	
SES, β_{013}	4.08	0.86	4.72	**
Attended suburban school, β_{014}	-0.15	1.48	-0.10	
Attended rural school, β_{015}	2.12	1.31	1.62	
1991 imputed score, β_{016}	0.51	1.84	0.28	
1992 imputed score, β_{017}	-9.50	1.80	-5.29	**
1993 imputed score, β_{018}	2.41	2.52	0.96	
Chapter 1 pattern 100, β_{019}	-5.88	2.23	-2.64	*
Chapter 1 pattern 010, β_{020}	-12.74	3.99	-3.19	*
Chapter 1 pattern 001, β_{021}	-5.31	8.06	-0.66	
Chapter 1 pattern 110, β_{022}	-14.78	3.97	-3.72	**
Chapter 1 pattern 101, β_{023}	-16.21	7.29	-2.22	
Chapter 1 pattern 011, β_{024}	-24.19	9.57	-2.53	*
Chapter 1 pattern 111, β_{025}	-26.22	6.82	-3.84	**
1991 Other compensatory educ. participant, β_{026}	-9.15	3.58	-2.55	*
1992 Other compensatory educ. participant, β_{027}	-5.17	3.36	-1.54	
1993 Other compensatory educ. participant, β_{028}	-13.33	4.74	-2.81	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	20.27	0.84		
Retained, β_{11}	1.28	2.53	0.51	
American Indian, β_{12}	1.91	2.03	0.94	
Asian, β_{13}	1.56	1.22	1.28	
African American, β_{14}	1.03	1.04	0.98	
Latino, β_{15}	2.12	0.96	2.21	
Other race, β_{16}	1.20	2.89	0.41	
Gender, β_{17}	-2.52	0.58	-4.34	**
Student engagement, β_{18}	0.19	0.57	0.34	
Math self-efficacy, β_{19}	-1.30	0.62	-2.11	
Locus of control, β_{110}	-0.55	0.81	-0.68	
Number of schools attended, β_{111}	0.54	0.31	1.73	
Attitude toward school, β_{112}	1.84	0.70	2.63	*
SES, β_{113}	1.13	0.44	2.54	*
Attended suburban school, β_{114}	0.68	0.77	0.89	
Attended rural school, β_{115}	0.40	0.68	0.59	
1991 imputed score, β_{116}	-2.35	0.91	-2.57	*
1992 imputed score, β_{117}	3.12	0.93	3.37	**
1993 imputed score, β_{118}	-0.74	1.30	-0.57	
Chapter 1 pattern 100, β_{119}	1.34	1.17	1.14	
Chapter 1 pattern 010, β_{120}	4.63	2.09	2.22	
Chapter 1 pattern 001, β_{121}	4.24	4.40	0.97	
Chapter 1 pattern 110, β_{122}	7.65	2.11	3.63	**
Chapter 1 pattern 101, β_{123}	9.88	4.06	2.43	
Chapter 1 pattern 011, β_{124}	-1.28	4.96	-0.26	
Chapter 1 pattern 111, β_{125}	0.87	3.77	0.23	
1991 Other compensatory educ. participant, β_{126}	-3.02	1.88	-1.61	
1992 Other compensatory educ. participant, β_{127}	-0.37	1.85	-0.20	
1993 Other compensatory educ. participant, β_{128}	2.44	2.46	0.99	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1,519.87	124.61
Conditional	739.85	118.79
Proportion of variance explained	51.32	4.67

NOTE: * $p < .01$, ** $p < .001$

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Table 6.17 Two-Level Analysis of Student Reading Achievement (Cohort 7 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, β_{00}	750.05	0.68	1103.52	
Average learning rate, β_{10}	4.17	0.31	13.46	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Weighted Students (unweighted n=3,353)				
Student initial total reading scale score, r_{0i}	1,136.61	3352	16,970.27	.000
Student reading learning rate, r_{1i}	99.68	3352	5,300.55	.000
Level-1 error, e_{ti}	362.84			
Reliability of Coefficient Estimates				
Initial total reading scale score, π_{0i}	.71			
Reading learning rate, π_{1i}	.31			
Correlation of Initial Scale Score with Learning Rate	.02			

Table 6.18 Two-Level Analysis of Student Reading Achievement (Cohort 7 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	746.64	1.48		
Retained, β_{01}	-12.28	4.35	-2.83	*
American Indian, β_{02}	-2.87	4.32	-0.66	
Asian, β_{03}	-1.20	3.29	-0.36	
African American, β_{04}	-15.52	1.88	-8.27	**
Latino, β_{05}	-10.98	2.19	-5.02	**
Other race, β_{06}	0.49	6.78	0.07	
Gender, β_{07}	1.10	1.14	0.96	
Student engagement, β_{08}	16.66	1.02	16.34	**
SES, β_{09}	10.25	0.88	11.63	**
Attended suburban school, β_{010}	5.36	1.59	3.71	**
Attended rural school, β_{011}	2.80	1.46	1.92	
Reading self-efficacy, β_{012}	22.98	1.29	17.83	**
Attitude toward school, β_{013}	-6.43	1.29	-5.00	**
1991 imputed score, β_{014}	-1.44	3.14	-0.46	
1992 imputed score, β_{015}	0.38	2.09	0.18	
1993 imputed score, β_{016}	-2.60	1.83	-1.42	
Model for learning rate, π_{1i}				
Intercept, β_{10}	3.71	0.87		
Retained, β_{11}	6.80	2.51	2.71	*
American Indian, β_{12}	-6.00	2.26	-2.67	*
Asian, β_{13}	-4.09	1.94	-2.11	
African American, β_{14}	-3.53	1.09	-3.23	*
Latino, β_{15}	0.58	1.28	0.46	
Other race, β_{16}	-11.07	3.87	-2.86	*
Gender, β_{17}	-1.27	0.64	-1.99	
Student engagement, β_{18}	1.30	0.57	2.28	
SES, β_{19}	0.29	0.49	0.60	
Attended suburban school, β_{110}	-0.49	0.91	-0.54	
Attended rural school, β_{111}	2.27	0.86	2.65	**
Reading self-efficacy, β_{112}	-0.97	0.72	-1.34	
Attitude toward school, β_{113}	3.93	0.72	5.45	**
1991 imputed score, β_{114}	-1.25	1.77	-0.71	
1992 imputed score, β_{115}	-0.49	1.12	-0.45	
1993 imputed score, β_{116}	1.05	1.05	1.00	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1136.60	99.68
Conditional	596.22	91.26
Proportion of variance explained	47.54	8.45

NOTE: * $p < .01$, ** $p < .001$

Table 6.19 Two-Level Analysis of Student Reading Achievement (Cohort 7 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	749.55	1.46		
Retained, β_{01}	-13.11	4.26	-3.08	*
American Indian, β_{02}	-1.93	4.21	-0.46	
Asian, β_{03}	-2.46	3.22	-0.76	
African American, β_{04}	-10.89	1.88	-5.78	**
Latino, β_{05}	-8.77	2.17	-4.05	**
Other race, β_{06}	-0.64	6.61	-0.10	
Gender, β_{07}	1.06	1.11	0.95	
Student engagement, β_{08}	14.98	1.00	14.95	**
SES, β_{09}	8.34	0.87	10.20	**
Attended suburban school, β_{010}	5.75	1.57	3.67	**
Attended rural school, β_{011}	2.98	1.43	2.09	
Reading self-efficacy, β_{012}	19.76	1.28	15.42	**
Attitude toward school, β_{013}	-5.09	1.26	-4.03	**
1991 imputed score, β_{014}	-0.38	3.07	-0.12	
1992 imputed score, β_{015}	1.01	2.04	0.49	
1993 imputed score, β_{016}	-3.33	1.79	-1.86	
1991 Chapter 1 participant, β_{017}	-9.73	2.37	-4.10	**
1992 Chapter 1 participant, β_{018}	-14.63	2.71	-5.41	**
1993 Chapter 1 participant, β_{019}	-16.03	4.80	-3.34	**
1991 Other compensatory educ. participant, β_{020}	-17.55	2.57	-6.83	**
1992 Other compensatory educ. participant, β_{021}	-7.75	2.98	-2.60	*
1993 Other compensatory educ. participant, β_{022}	-10.27	2.68	-3.84	**
Model for learning rate, π_{1i}				
Intercept, β_{10}	3.48	0.88		
Retained, β_{11}	6.96	2.51	2.77	*
American Indian, β_{12}	-6.34	2.26	-2.80	*
Asian, β_{13}	-3.99	1.94	-2.06	
African American, β_{14}	-3.61	1.12	-3.22	*
Latino, β_{15}	0.53	1.30	0.41	
Other race, β_{16}	-10.88	3.87	-2.81	*
Gender, β_{17}	-1.27	0.64	-2.00	
Student engagement, β_{18}	1.34	0.57	2.34	
SES, β_{19}	0.40	0.50	0.80	
Attended suburban school, β_{110}	-0.45	0.92	-0.49	
Attended rural school, β_{111}	2.35	0.86	2.74	*
Reading self-efficacy, β_{112}	-0.70	0.74	-0.96	
Attitude toward school, β_{113}	3.91	0.72	5.40	**
1991 imputed score, β_{114}	-1.20	1.77	-0.68	
1992 imputed score, β_{115}	-0.51	1.21	-0.45	
1993 imputed score, β_{116}	0.99	1.05	0.94	
1991 Chapter 1 participant, β_{117}	-1.86	1.41	-1.32	
1992 Chapter 1 participant, β_{118}	4.51	1.60	2.83	*
1993 Chapter 1 participant, β_{119}	-0.51	2.94	-0.18	
1991 Other compensatory educ. participant, β_{120}	3.00	1.54	1.95	
1992 Other compensatory educ. participant, β_{121}	-1.89	1.73	-1.09	
1993 Other compensatory educ. participant, β_{122}	0.42	1.56	0.27	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1136.60	99.68
Conditional	550.21	91.19
Proportion of variance explained	51.59	8.52

NOTE: * $p < .01$, ** $p < .001$

Table 6.20 Two-Level Analysis of Student Reading Achievement (Cohort 7 Model with Student Background Attributes and Chapter 1 Participation Pattern Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	749.80	1.47		
Retained, β_{01}	-12.77	4.26	-3.00	*
American Indian, β_{02}	-1.74	4.21	-0.41	
Asian, β_{03}	-2.53	3.22	-0.79	
African American, β_{04}	-10.86	1.88	-5.77	**
Latino, β_{05}	-8.91	2.17	-4.11	**
Other race, β_{06}	-0.73	6.61	-0.11	
Gender, β_{07}	1.11	1.11	1.00	
Student engagement, β_{08}	14.94	1.00	14.91	**
SES, β_{09}	8.76	0.87	10.12	**
Attended suburban school, β_{010}	5.74	1.57	3.66	**
Attended rural school, β_{011}	2.84	1.43	1.99	
Reading self-efficacy, β_{012}	19.60	1.28	15.30	**
Attitude toward school, β_{013}	-5.13	1.26	-4.07	**
1991 imputed score, β_{014}	-0.57	3.07	-0.19	
1992 imputed score, β_{015}	1.04	2.04	0.51	
1993 imputed score, β_{016}	-3.24	1.79	-1.81	
Chapter 1 pattern 100, β_{017}	-12.55	2.80	-4.49	
Chapter 1 pattern 010, β_{018}	-19.85	3.65	-5.44	
Chapter 1 pattern 001, β_{019}	-29.81	7.22	-4.13	
Chapter 1 pattern 110, β_{020}	-22.57	3.55	-6.35	
Chapter 1 pattern 101, β_{021}	-15.14	12.67	-1.20	
Chapter 1 pattern 011, β_{022}	-23.31	9.59	-2.43	
Chapter 1 pattern 111, β_{023}	-26.99	10.19	-2.65	
1991 Other compensatory educ. participant, β_{024}	-17.59	2.57	-6.83	
1992 Other compensatory educ. participant, β_{025}	-7.98	2.98	-2.68	
1993 Other compensatory educ. participant, β_{026}	-9.97	2.68	-3.72	
Model for learning rate, π_{1i}				
Intercept, β_{10}	3.46	0.88		
Retained, β_{11}	6.81	2.51	2.71	*
American Indian, β_{12}	-6.42	2.26	-2.84	*
Asian, β_{13}	-3.96	1.94	-2.05	
African American, β_{14}	-3.67	1.12	-3.27	**
Latino, β_{15}	0.68	1.30	0.52	
Other race, β_{16}	-10.84	3.87	-2.81	*
Gender, β_{17}	-1.32	0.64	-2.08	
Student engagement, β_{18}	1.36	0.57	2.37	
SES, β_{19}	0.43	0.50	0.86	
Attended suburban school, β_{110}	-0.50	0.92	-0.54	
Attended rural school, β_{111}	2.34	0.86	2.72	*
Reading self-efficacy, β_{112}	-0.64	0.74	-0.87	
Attitude toward school, β_{113}	3.88	0.72	5.36	**
1991 imputed score, β_{114}	-1.09	1.77	-0.61	
1992 imputed score, β_{115}	-0.52	1.12	-0.47	
1993 imputed score, β_{116}	0.93	1.05	0.89	
Chapter 1 pattern 100, β_{117}	-0.93	1.66	-0.56	
Chapter 1 pattern 010, β_{118}	4.96	2.11	2.35	
Chapter 1 pattern 001, β_{119}	4.95	4.32	1.15	
Chapter 1 pattern 110, β_{120}	3.36	2.13	1.57	
Chapter 1 pattern 101, β_{121}	-6.27	7.78	-0.81	
Chapter 1 pattern 011, β_{122}	9.79	5.96	1.64	
Chapter 1 pattern 111, β_{123}	-14.85	6.60	-2.25	
1991 Other compensatory educ. participant, β_{124}	2.87	1.54	1.87	
1992 Other compensatory educ. participant, β_{125}	-1.72	1.73	-0.99	
1993 Other compensatory educ. participant, β_{126}	0.39	1.56	0.25	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1136.60	99.68
Conditional	549.23	91.11
Proportion of variance explained	51.68	8.60

NOTE: * $p < .01$, ** $p < .001$

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Table 6.21 Two-Level Analysis of Student Math Achievement (Cohort 7 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total math scale score, β_{00}	762.00	0.76	1,003.08	
Average learning rate, β_{10}	8.09	0.35	23.08	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Weighted Students (unweighted n=3,237)				
Student initial total math scale score, r_{0i}	1,398.24	3,236	17,455.29	.000
Student math learning rate, r_{1i}	141.70	3,236	5,601.85	.000
Level-1 error, e_{ti}	408.80			
Reliability of Coefficient Estimates				
Initial total math scale score, π_{0i}	.73			
Math learning rate, π_{1i}	.36			
Correlation of Initial Scale Score with Learning Rate	.06			

Table 6.22 Two-Level Analysis of Student Math Achievement (Cohort 7 Model with Student Background Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	759.10	1.62		
Retained, β_{01}	-16.13	4.52	-3.57	**
American Indian, β_{02}	1.55	4.60	0.34	
Asian, β_{03}	10.02	3.67	2.73	*
African American, β_{04}	-10.37	2.05	-5.07	**
Latino, β_{05}	-8.58	2.33	-3.68	**
Other race, β_{06}	5.11	7.84	0.65	
Gender, β_{07}	-1.63	1.27	-1.29	
Student engagement, β_{08}	26.24	1.09	24.01	**
SES, β_{09}	9.10	0.98	9.30	**
Attended suburban school, β_{010}	3.95	1.74	2.27	
Attended rural school, β_{011}	2.67	1.58	1.69	
Math self-efficacy, β_{012}	17.79	1.11	16.05	**
Parent involvement, β_{013}	-5.83	1.49	-3.91	**
1991 imputed score, β_{014}	0.38	3.23	0.12	
1992 imputed score, β_{015}	1.10	2.11	0.52	
1993 imputed score, β_{016}	-6.36	2.02	-3.15	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	6.09	0.97		
Retained, β_{11}	7.86	2.68	2.93	*
American Indian, β_{12}	-8.19	2.50	-3.27	**
Asian, β_{13}	-4.00	2.23	-1.80	
African American, β_{14}	-3.15	1.22	-2.58	*
Latino, β_{15}	1.47	1.39	1.06	
Other race, β_{16}	-7.20	4.61	-1.56	
Gender, β_{17}	-0.91	0.73	-1.25	
Student engagement, β_{18}	1.66	0.63	2.65	*
SES, β_{19}	1.53	0.56	2.72	*
Attended suburban school, β_{110}	-0.24	1.02	-0.24	
Attended rural school, β_{111}	4.07	0.95	4.30	**
Math self-efficacy, β_{112}	0.69	0.64	1.09	
Parent involvement, β_{113}	0.25	0.86	0.30	
1991 imputed score, β_{114}	-0.12	1.92	-0.06	
1992 imputed score, β_{115}	4.32	1.18	3.68	**
1993 imputed score, β_{116}	3.03	1.19	2.55	*

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	1,398.24	141.70
Conditional	703.10	130.12
Proportion of variance explained	49.72	8.17

NOTE: * $p < .01$, ** $p < .001$

Table 6.23 Two-Level Analysis of Student Math Achievement (Cohort 7 Model with Student Background Attributes and Yearly Chapter 1 Participation Indicators as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	759.74	1.62		
Retained, β_{01}	-15.94	4.50	-3.55	**
American Indian, β_{02}	3.20	4.59	0.70	
Asian, β_{03}	9.78	3.65	2.68	*
African American, β_{04}	-8.03	2.08	-3.87	**
Latino, β_{05}	-7.25	2.33	-3.11	*
Other race, β_{06}	5.27	7.80	0.68	
Gender, β_{07}	-1.58	1.26	-1.26	
Student engagement, β_{08}	25.71	1.09	23.54	**
SES, β_{09}	8.57	0.98	8.77	**
Attended suburban school, β_{010}	3.80	1.75	2.18	
Attended rural school, β_{011}	3.18	1.58	2.01	
Math self-efficacy, β_{012}	17.50	1.10	15.84	**
Parent involvement, β_{013}	-6.10	1.48	-4.11	**
1991 imputed score, β_{014}	0.80	3.21	0.25	
1992 imputed score, β_{015}	0.96	2.10	0.46	
1993 imputed score, β_{016}	-6.53	2.01	-3.24	*
1991 Chapter 1 participant, β_{117}	-11.19	3.57	-3.14	*
1992 Chapter 1 participant, β_{118}	-5.34	4.20	-1.27	
1991 Other compensatory educ. participant, β_{119}	-10.13	3.42	-2.96	*
1992 Other compensatory educ. participant, β_{120}	-5.28	3.81	-1.39	
Model for learning rate, π_{1i}				
Intercept, β_{10}	5.89	0.97		
Retained, β_{11}	7.77	2.68	2.90	*
American Indian, β_{12}	-7.52	2.52	-2.99	*
Asian, β_{13}	-3.84	2.23	-1.73	
African American, β_{14}	-2.91	1.24	-2.34	
Latino, β_{15}	1.52	1.40	1.09	
Other race, β_{16}	-7.04	4.61	-1.53	
Gender, β_{17}	-0.85	0.73	-1.17	
Student engagement, β_{18}	1.59	0.63	2.52	*
SES, β_{19}	1.44	0.57	2.54	*
Attended suburban school, β_{110}	0.11	1.02	0.10	
Attended rural school, β_{111}	4.43	0.95	4.65	**
Math self-efficacy, β_{112}	0.60	0.64	0.95	
Parent involvement, β_{113}	0.30	0.86	0.35	
1991 imputed score, β_{114}	0.02	1.92	0.01	
1992 imputed score, β_{115}	4.26	1.18	3.62	**
1993 imputed score, β_{116}	3.09	1.19	2.59	*
1991 Chapter 1 participant, β_{117}	-2.93	2.15	-1.36	
1992 Chapter 1 participant, β_{118}	-3.04	2.52	-1.20	
1991 Other compensatory educ. participant, β_{119}	3.40	2.10	1.62	
1992 Other compensatory educ. participant, β_{120}	-1.66	2.29	-0.73	

Variance Explained by Student-Level Predictors		
Model	*Initial Status Variance (τ_{00})*	*Learning Rate Variance (τ_{11})*
Unconditional	1,398.24	141.70
Conditional	691.64	130.12
Proportion of variance explained	50.53	8.17

NOTE: * $p < .01$, ** $p < .001$

Two-Level Hierarchical Analysis of Instructional Effects

The procedures for designing the models of instructional effects were similar to those employed for the student background effects models. As mentioned in Section 5, the instructional effects samples included different groups of students than the student background effects models. As stated previously, because we designed the instructional effects models to assess the impact of various attributes of both regular classroom and Chapter 1 instruction, our instructional effects models included only those students who received Chapter 1 math or R/E/LA in either 1992 or 1993, or in both years. Due to the selectiveness of these samples, we did not use the student weights, which were designed to produce national estimates of the total student population regardless of Chapter 1 participation status. Again, as discussed in Section 5, it was not possible to retain all of the instructional variables referenced in Section 3. The instructional variables we did employ in these analyses included the following:

- Regular class formed based on ability;
- Regular class and Chapter 1 student-centered, advanced-skills approach;
- Regular class and Chapter 1 teacher-led, basic skills approach;
- In-class regular and Chapter 1 grouping practices (individual, small-group, and whole-class instruction);
- Regular class and Chapter 1 class size;
- Regular class and Chapter 1 minutes per week of instruction in subject, and;
- Interaction terms representing all possible combinations of regular class and Chapter 1 student-centered, advanced-skills and teacher-led, basic skills approaches.

In all cases, initial unconditional models, or models without predictors, were developed. After the unconditional models were developed, the student background variables used in the student background effects models were entered as predictors, and those variables that were significant predictors of the intercept, the slope, or both were retained. Because these analyses were unweighted, we retained predictors with p values of less than .05. The significant student background variables in these models served two purposes: (1) to control for student differences when investigating the effects of the instructional variables, and; (2) to provide base conditional models from which it was possible to compute the additional between-student variance accounted for by the instructional predictors. Next, the instructional attributes were introduced into the models and the significant predictors were retained.

The unconditional and final reduced models are tabulated on separate pages. The models are presented by cohort and subject. Following these tables, a table is provided that indicates the additional proportions of variances accounted for in the intercepts and slopes by the significant instructional attributes beyond the significant student background covariates. Finally, note that no tables are presented for Cohort 7 total reading achievement, because we did not find any significant instructional predictors after controlling for student background characteristics.

Because the student and instructional composite factors were standardized, a value of 0 refers to a student with a mean value for these measures. The coefficients are unstandardized beta values, so they are directly interpretable. For the developed instructional and student factors, the beta values represent the displacement score for one unit change in the variable. Because the factor scores were standardized, a unit change equals one standard deviation. Variables that were based on single items, such as class size, were not standardized. In all cases, these variables were "centered," which permits one to interpret the intercepts and slopes in the models as those for students with an average score on the measures. Of course, the beta values for these variables represent the displacement score for one unit change in the variable expressed in its original metric (refer to Sections 2 and 3, respectively, for further information regarding the student and instructional variables).

As mentioned, because the beta coefficients are unstandardized, they are not directly comparable across the variables within models and between the various models. However, one can compute average monthly learning rates across the period of the study for the Chapter 1 students in the instructional analyses for each cohort and subject. These average monthly learning rates can be used to interpret the magnitudes of the unstandardized beta coefficients. For Cohort 1, there were 20 months between the first and final testing period, whereas, for Cohorts 3 and 7, there were 24 months across this period. One can compute the average monthly learning rate for each Cohort and subject by referring to the unconditional models and dividing the average learning rate coefficient by the total numbers of months mentioned above. For instance, from Table 6.24, one may derive an average monthly learning rate for Cohort 1 reading achievement of 3.48 scale score points by dividing the average learning rate coefficient of 69.61 by 20 months. For Cohort 7 math achievement (see Table 6.32), the average monthly learning rate is 0.02 (0.39 / 24 months).

Table 6.24 Two-Level Analysis of Instructional Effects on Chapter 1 Student Reading Achievement (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, β_{00}	449.76	1.56	288.47	
Average learning rate, β_{10}	69.61	1.09	63.83	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Unweighted Students (n=967)				
Student initial total reading scale score, r_{0i}	1,519.43	966	2,731.65	.000
Student reading learning rate, r_{1i}	651.36	966	2,227.51	.000
Level-1 error, e_{ti}	997.55			
Reliability of Coefficient Estimates				
Initial total reading scale score, π_{0i}	.65			
Reading learning rate, π_{1i}	.57			
Correlation of Initial Scale Score with Learning Rate	-.29			

Table 6.25 Two-Level Analysis of Instructional Effects on Chapter 1 Student Reading Achievement (Cohort 1 Model with Student and Instructional Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	450.44	3.51		
Retained, β_{01}	-31.52	5.99	-5.26	**
American Indian, β_{02}	15.95	8.54	1.87	
Asian, β_{03}	-28.38	8.28	-3.43	**
African American, β_{04}	-24.48	3.87	-6.33	**
Latino, β_{05}	-25.15	4.61	-5.46	**
Other race, β_{06}	-21.07	21.75	-0.97	
Gender, β_{07}	8.47	2.86	2.96	**
Student engagement, β_{08}	20.06	2.38	8.44	**
Attended suburban school, β_{09}	19.42	4.13	4.70	**
Attended rural school, β_{010}	17.18	3.66	4.70	**
1991 imputed score, β_{011}	-0.04	6.44	-0.01	
1992 imputed score, β_{012}	-11.58	6.16	-1.88	
1993 imputed score, β_{013}	-11.44	6.54	-2.75	
1992 Other compensatory educ. participant, β_{014}	-2.91	4.89	-0.59	
1993 Other compensatory educ. participant, β_{015}	4.20	4.86	0.87	
Reg. class teacher-led basic skills, β_{016}	1.89	3.93	0.48	
Reg. class student-centered advanced skills, β_{017}	-5.00	4.10	-1.22	
Regular class size, β_{018}	-1.08	0.34	-3.21	**
Chapter 1 teacher-led basic skills, β_{019}	-5.44	3.62	-1.50	
Chapter 1 student-centered advanced skills, β_{020}	5.63	4.12	1.37	
Chapter 1 class percent whole class instruction, β_{021}	0.01	0.06	0.20	
Ch. 1 basic skills X Ch. 1 advanced skills, β_{022}	-5.44	6.64	-0.82	
Ch. 1 basic skills X Reg. class advanced skills, β_{023}	-18.30	8.55	-2.14	*
Model for learning rate, π_{1i}				
Intercept, β_{10}	80.17	2.56		
Retained, β_{11}	-8.54	4.37	-1.95	*
American Indian, β_{12}	-9.88	6.22	-1.59	
Asian, β_{13}	15.41	6.04	2.55	**
African American, β_{14}	9.00	2.82	3.19	**
Latino, β_{15}	10.28	3.36	3.06	**
Other race, β_{16}	7.38	15.86	0.47	
Gender, β_{17}	-7.50	2.08	-3.60	**
Student engagement, β_{18}	10.32	1.73	5.96	**
Attended suburban school, β_{19}	-6.70	3.01	-2.23	*
Attended rural school, β_{110}	-8.31	2.67	-3.12	**
1991 imputed score, β_{111}	2.29	4.70	0.49	
1992 imputed score, β_{112}	2.19	4.49	0.49	
1993 imputed score, β_{113}	1.69	4.77	0.35	
1992 Other compensatory educ. participant, β_{114}	9.97	3.57	2.80	**
1993 Other compensatory educ. participant, β_{115}	-15.75	3.54	-4.45	**
Reg. class teacher-led basic skills, β_{116}	5.29	2.86	1.85	
Reg. class student-centered advanced skills, β_{117}	1.37	2.99	0.46	
Regular class size, β_{118}	-0.22	0.24	-0.91	
Chapter 1 teacher-led basic skills, β_{119}	3.86	2.64	1.46	
Chapter 1 student-centered advanced skills, β_{120}	-5.47	3.01	-1.82	
Chapter 1 class percent whole class instruction, β_{121}	-0.14	0.04	-3.22	**
Ch. 1 basic skills X Ch. 1 advanced skills, β_{122}	-14.51	4.84	-3.00	**
Ch. 1 basic skills X Reg. class advanced skills, β_{123}	26.52	6.24	4.25	**

Variance Explained by Student/Instructional Predictors		
Model	*Initial Status Variance (τ_{π_0})*	*Learning Rate Variance (τ_{π_1})*
Unconditional	1519.43	651.36
Conditional	994.57	471.99
Proportion of variance explained	34.54	27.54

NOTE: * $p < .05$, ** $p < .01$

Table 6.26 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial math concepts/applications scale score, β_{00}	140.32	3.29	133.67	
Average learning rate, β_{10}	71.81	1.72	41.72	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Unweighted Students (n=264)				
Student initial math concepts/applications scale score, r_{0i}	2,027.96	263	900.51	.000
Student math learning rate, r_{1i}	280.33	263	409.88	.000
Level-1 error, e_{ti}	1,003.94			
Reliability of Coefficient Estimates				
Initial math concepts/applications scale score, τ_{0i}	.71			
Math learning rate, τ_{1i}	.36			
Correlation of Initial Scale Score with Learning Rate	-.20			

Table 6.27 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 1 Model with Student Background and Instructional Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0i}				
Intercept, β_{00}	457.38	5.87		
Retained, β_{01}	-38.61	11.58	-3.33	**
American Indian, β_{02}	21.79	18.37	1.19	
Asian, β_{03}	-8.06	15.76	-0.51	
African American, β_{04}	-30.69	7.66	-4.01	**
Latino, β_{05}	-34.38	9.61	-3.58	**
Student engagement, β_{06}	29.44	5.09	5.79	**
Attended suburban school, β_{07}	29.38	9.73	3.02	**
Attended rural school, β_{08}	3.63	6.95	0.52	
1991 imputed score, β_{09}	26.76	19.43	1.38	
1992 imputed score, β_{010}	-2.96	13.33	-0.22	
1993 imputed score, β_{011}	-3.81	13.01	-0.29	
1992 Other compensatory educ. participant, β_{012}	-43.95	15.15	-2.90	**
Regular class size, β_{013}	-2.87	0.87	-3.31	**
Reg. class teacher-led basic skills, β_{014}	-7.27	8.16	-0.89	
Reg. class student-centered advanced skills, β_{015}	16.35	10.00	1.64	
Chapter 1 percent small group instruction, β_{016}	0.31	0.10	3.06	**
Chapter 1 teacher-led basic skills, β_{017}	-8.18	6.04	-1.36	
Reg. X Ch. 1 teacher-led basic skills, β_{018}	-25.47	12.33	-2.07	*
Model for learning rate, π_{1i}				
Intercept, β_{00}	78.98	3.32		
Retained, β_{01}	5.34	6.55	0.81	
American Indian, β_{02}	-7.76	10.39	-0.75	
Asian, β_{03}	5.15	8.92	0.58	
African American, β_{04}	-0.24	4.33	-0.06	
Latino, β_{05}	2.44	5.44	0.45	
Student engagement, β_{06}	6.39	2.88	2.22	*
Attended suburban school, β_{07}	-22.95	5.50	-4.17	**
Attended rural school, β_{08}	-5.52	3.93	-1.40	
1991 imputed score, β_{09}	-12.45	10.99	-1.13	
1992 imputed score, β_{010}	-3.28	7.54	-0.44	
1993 imputed score, β_{011}	10.17	7.36	1.38	
1992 Other compensatory educ. participant, β_{012}	14.09	8.57	1.64	
Regular class size, β_{013}	0.63	0.49	1.29	
Reg. class teacher-led basic skills, β_{014}	13.10	4.62	2.84	**
Reg. class student-centered advanced skills, β_{015}	-15.20	5.66	-2.69	**
Chapter 1 percent small group instruction, β_{016}	0.01	0.06	0.19	
Chapter 1 teacher-led basic skills, β_{017}	7.06	3.41	2.07	*
Reg. X Ch. 1 teacher-led basic skills, β_{018}	7.61	6.98	1.09	

Variance Explained by Student/Instructional Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	2,027.96	280.33
Conditional	1,203.65	150.71
Proportion of variance explained	41.65	46.24

NOTE: * $p < .05$, ** $p < .01$

Table 6.28 Two-Level Analysis of Instructional Effects on Chapter 1 Student Reading Achievement (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, β_{00}	635.02	1.58	402.02	
Average learning rate, β_{10}	14.92	0.74	20.15	
Random Effect	*Variance Component*	*df*	X^2	*p value*
Level 2 Unweighted Students (n=678)				
Student initial total reading scale score, r_{0i}	1,229.33	677	2,477.04	.000
Student reading learning rate, r_{1i}	94.52	677	907.67	.000
Level-1 error, e_{ti}	554.82			
Reliability of Coefficient Estimates				
Initial total reading scale score, π_{0i}	.73			
Reading learning rate, π_{1i}	.25			
Correlation of Initial Scale Score with Learning Rate	-.31			

Table 6.29 Two-Level Analysis of Instructional Effects on Chapter 1 Student Reading Achievement (Cohort 3 Model with Student and Instructional Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0i}				
Intercept, β_{00}	658.59	3.61		
Retained, β_{01}	-27.13	7.77	-3.49	**
American Indian, β_{02}	-7.36	8.51	-0.87	
Asian, β_{03}	-22.40	9.48	-2.36	*
African American, β_{04}	-10.10	3.56	-2.84	**
Latino, β_{05}	-17.27	3.90	-4.43	**
Other race, β_{06}	-27.35	25.00	-1.09	
Gender, β_{07}	-4.96	2.84	-1.75	
Student engagement, β_{08}	9.06	2.65	3.42	**
Reading self-efficacy, β_{09}	19.25	2.71	7.11	**
Locus of control, β_{010}	21.05	3.25	6.49	**
Attitude toward school, β_{011}	-7.73	3.18	-2.43	*
Attended suburban school, β_{012}	6.00	4.27	1.41	
Attended rural school, β_{013}	-0.42	3.48	-0.12	
1991 imputed score, β_{014}	-0.50	5.12	-0.10	
1992 imputed score, β_{015}	-12.00	4.81	-2.49	*
1993 imputed score, β_{016}	-11.36	5.62	-2.02	
1992 minutes of Chapter 1 participation, β_{017}	-0.03	0.01	-2.73	**
1993 minutes of Chapter 1 participation, β_{018}	-0.02	0.01	-2.78	**
Chapter 1 teacher-led basic skills, β_{019}	-2.89	3.92	-0.74	
Model for learning rate, π_{1i}				
Intercept, β_{10}	17.26	1.95		
Retained, β_{11}	8.82	4.19	2.11	*
American Indian, β_{12}	-5.09	4.58	-1.11	
Asian, β_{13}	-0.87	5.11	-0.17	
African American, β_{14}	-5.76	1.92	-3.01	**
Latino, β_{15}	1.14	2.10	0.54	
Other race, β_{16}	-4.53	13.47	-0.34	
Gender, β_{17}	-0.39	1.53	-0.25	
Student engagement, β_{18}	4.05	1.43	2.83	**
Reading Self Efficacy, β_{19}	-4.23	1.46	-2.90	**
Locus of control, β_{110}	0.15	1.75	0.09	
Attitude toward school, β_{111}	1.97	1.71	1.15	
Attended suburban school, β_{112}	-4.59	2.30	-2.00	*
Attended rural school, β_{113}	0.02	1.87	0.01	
1991 imputed score, β_{114}	-3.68	2.76	-1.34	
1992 imputed score, β_{115}	2.51	2.59	0.97	
1993 imputed score, β_{116}	1.90	3.03	0.63	
1992 minutes of Chapter 1 participation, β_{117}	0.01	0.01	1.27	
1993 minutes of Chapter 1 participation, β_{118}	0.00	0.00	0.99	
Chapter 1 teacher-led basic skills, β_{119}	4.54	2.11	2.15	*

Variance Explained by Student/Instructional Predictors		
Model	*Initial Status Variance (τ_{π_0})*	*Learning Rate Variance (τ_{π_1})*
Unconditional	1,229.33	94.52
Conditional	742.37	72.37
Proportion of variance explained	39.61	23.43

NOTE: * $p < .05$, ** $p < .01$

Table 6.30 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total math scale score, β_{00}	638.50	2.32	275.45	
Average learning rate, β_{10}	25.97	1.17	22.15	
Random Effect	*Variance Component*	*df*	X^2	*p value*
Level 2 Unweighted Students (n=245)				
Student initial total math scale score, r_{0i}	911.22	244	792.66	.000
Student math learning rate, r_{1i}	93.71	244	338.04	.000
Level-1 error, e_{ti}	486.29			
Reliability of Coefficient Estimates				
Initial total math scale score, π_{0i}	.69			
Math learning rate, π_{1i}	.28			
Correlation of Initial Scale Score with Learning Rate	-.15			

Table 6.31 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 3 Model with Student Background and Instructional Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	661.90	4.87		
Retained, β_{01}	-27.49	9.99	-2.75	**
American Indian, β_{02}	-15.38	30.74	-0.50	
Asian, β_{03}	-5.85	12.40	-0.47	
African American, β_{04}	-11.59	4.83	-2.40	*
Latino, β_{05}	-11.54	6.32	-1.83	
Student engagement, β_{06}	20.24	3.72	5.44	**
Math self-efficacy, β_{07}	13.54	3.80	3.57	**
Attended suburban school, β_{08}	-14.94	9.05	-1.65	
Attended rural school, β_{09}	-3.63	4.82	-0.75	
1991 imputed score, β_{010}	15.71	6.97	2.25	*
1992 imputed score, β_{011}	9.92	6.68	1.49	
1993 imputed score, β_{012}	0.19	9.57	0.02	
1992 Other compensatory educ. participant, β_{013}	-11.77	5.51	-2.14	*
Regular class formed based on ability, β_{014}	-9.47	4.21	-2.25	*
1993 Minutes of Chapter 1 participation, β_{015}	-0.07	0.02	-2.99	**
Chapter 1 teacher-led basic skills, β_{016}	13.63	5.14	2.66	**
Ch. 1 student-centered advanced skills, β_{017}	-18.92	5.03	-3.77	**
Model for learning rate, π_{1i}				
Intercept, β_{10}	23.54	2.90		
Retained, β_{11}	5.40	5.95	0.91	
American Indian, β_{12}	16.83	18.30	0.92	
Asian, β_{13}	-4.56	7.38	-0.62	
African American, β_{14}	-0.25	2.88	-0.09	
Latino, β_{15}	4.90	3.76	1.30	
Student engagement, β_{16}	6.47	2.21	2.92	**
Math self-efficacy, β_{17}	-4.91	2.26	-2.17	*
Attended suburban school, β_{18}	-0.02	5.39	-0.00	
Attended rural school, β_{19}	4.40	2.87	1.54	
1991 imputed score, β_{110}	-5.73	4.15	-1.38	
1992 imputed score, β_{111}	-4.83	3.98	-1.22	
1993 imputed score, β_{112}	-5.80	5.70	-1.02	
1992 Other compensatory educ. participant, β_{113}	7.78	3.28	2.37	*
Regular class formed based on ability, β_{114}	3.25	2.51	1.30	
1993 Minutes of Chapter 1 participation, β_{115}	-0.00	0.01	-0.27	
Chapter 1 teacher-led basic skills, β_{116}	-2.88	3.06	-0.94	
Ch. 1 student-centered advanced skills, β_{117}	-0.52	2.99	-0.17	

Variance Explained by Student/Instructional Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	911.22	93.71
Conditional	488.56	73.63
Proportion of variance explained	46.38	21.43

NOTE: * $p < .05$, ** $p < .01$

Table 6.32 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 7 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total math scale score, β_{00}	722.91	3.80	190.32	
Average learning rate, β_{10}	0.39	3.02	0.13	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 2 Unweighted Students (n=75)				
Student initial total math scale score, r_{0i}	405.97	74	118.43	.001
Student math learning rate, r_{1i}	280.13	74	125.10	.000
Level-1 error, e_{ti}	811.31			
Reliability of Coefficient Estimates				
Initial total math scale score, π_{0i}	.38			
Math learning rate, π_{1i}	.41			
Correlation of Initial Scale Score with Learning Rate	.08			

Table 6.33 Two-Level Analysis of Instructional Effects on Chapter 1 Student Math Achievement (Cohort 7 Model with Student Background and Instructional Attributes as Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total math scale score, π_{0i}				
Intercept, β_{00}	697.52	7.61		
Student engagement, β_{01}	17.12	5.63	3.04	**
Attended suburban school, β_{02}	44.22	10.68	4.14	**
Attended rural school, β_{03}	44.94	8.55	5.26	**
1991 imputed score, β_{04}	3.45	16.17	0.21	
1992 imputed score, β_{05}	-7.87	20.10	-0.39	
1993 imputed score, β_{06}	-10.46	8.66	-1.21	
1992 Minutes of Chapter 1 participation, β_{07}	-0.11	0.05	-2.10	*
Chapter 1 teacher-led basic skills, β_{08}	-16.09	7.95	-2.02	*
Chapter 1 percent whole class instruction, β_{09}	0.40	0.13	2.99	**
Model for learning rate, π_{1i}				
Intercept, β_{10}	8.84	6.97		
Student engagement, β_{11}	3.44	5.16	0.67	
Attended suburban school, β_{12}	-10.39	9.78	-1.06	
Attended rural school, β_{13}	-13.98	7.83	-1.79	
1991 imputed score, β_{14}	-8.58	14.80	-0.58	
1992 imputed score, β_{15}	13.12	18.40	0.71	
1993 imputed score, β_{16}	12.07	7.93	1.52	
1992 Minutes of Chapter 1 participation, β_{17}	0.02	0.05	0.48	
Chapter 1 teacher-led basic skills, β_{18}	-2.85	7.28	-0.39	
Chapter 1 percent whole class instruction, β_{19}	-0.41	0.12	-3.34	**

Variance Explained by Student/Instructional Predictors		
Model	*Initial Status Variance (π_{0i})*	*Learning Rate Variance (π_{1i})*
Unconditional	405.97	280.13
Conditional	60.57	201.64
Proportion of variance explained	85.08	28.02

NOTE: * $p < .05$, ** $p < .01$

Table 6.34 Proportions of Variance Explained by Student Background Attributes and by the Addition of Instructional Predictors by Cohort and Subject

Cohort	Intercept		Slope	
	Reading	Math	Reading	Math
Cohort 1				
Proportion of variance explained by:				
Student Background Attributes	32.64	32.02	22.13	40.08
Student and Instructional Attributes	34.54	41.65	27.54	46.24
Incremental variance explained by Instructional Attributes	1.90	9.63	5.41	6.16
Cohort 3				
Proportion of variance explained by:				
Student Background Attributes	37.13	37.35	20.85	13.62
Student and Instructional Attributes	39.61	46.38	23.43	21.43
Incremental variance explained by Instructional Attributes	2.48	9.03	2.58	7.81
Cohort 7				
Proportion of variance explained by:				
Student Background Attributes		70.90		16.05
Student and Instructional Attributes		85.08		28.02
Incremental variance explained by Instructional Attributes		14.18		11.97

Three-Level Hierarchical Models of School Effects

These models were developed for Cohort 1 and 3 for both subjects, math and R/E/LA. The individual student growth trajectories comprised the level-1 model; the variation in growth parameters among children within a school is represented at level-2; and the variation among schools is captured in the level-3 model. For the three level models, this "partitioning" of the variance permits one to isolate the unique effects that schools have on individual student achievement. Most importantly, these models permit one to discover the school compositional, structural, and organizational variables (see Section 3) that are related to differences among schools for mean initial status (i.e., the 1991 baseline achievement measures) and mean slopes (i.e., the learning rates).

The simplest three-level models are unconditional at level-2 and level-3. In these cases, no level-2 student nor level-3 school variables were modeled to predict initial status and the learning rate. As discussed in the previous introductions to the two-level HLMs, these models form the foundation for subsequent conditional models, or those which attempt to model school-level attributes as predictors of between-school achievement differences. Specifically, the first tabulated results for reading achievement within and between high poverty Chapter 1 schools (Table 6.35) indicate significant level-2 variation among children within schools for initial status and learning rates. The results for the tabulated level-3 between schools random effects indicate significant variation among schools for mean initial status and mean school learning rates. Importantly, these results indicate that there is significant variation among the schools that may be accounted for by various school attributes. Indeed, this table reveals that about 25 percent of the variance in initial status and in learning rates lies between schools. In every case, these unconditional models were fit prior to consideration of any explanatory models.

After the unconditional models were developed, all school compositional attributes were entered into the first series of conditional models. School-level variables that were not significant predictors of either the intercept (i.e., mean initial status) or the slope (i.e., the mean learning rate), or both, were removed from these models. We used less stringent alpha levels than at level-2, p values of less than .10, because these were unweighted analyses. Once the resulting reduced school compositional models were developed, we created an additional model that provided assessments of the significance of the school organizational and structural variables.

Because the school factors were standardized, a value of 0 refers to a school with a mean value for these measures. The coefficients are unstandardized beta values, so they are directly interpretable. For the developed school factors, the beta values represent the displacement score for one unit change in the variable. Because the factor scores were standardized, a unit change equals one standard deviation. Variables that were based on single items, such as class size, were not standardized. In all cases, these unstandardized variables were "centered," which permits one to interpret the intercepts and slopes in the models as those for schools with an average score on the measures. Of course, the beta

values for these variables represent the displacement score for one unit change in the variable expressed in its original metric (refer to Section 4 for further information regarding the school variables).

As mentioned, because the beta coefficients are unstandardized, they are not directly comparable across the variables within models and between the various models. However, one can compute average monthly learning rates across the period of the study for the high-poverty Chapter 1 schools in the school-level analyses for each cohort and subject. These average monthly learning rates can be used to interpret the magnitudes of the unstandardized beta coefficients. For Cohort 1, there were 20 months between the first and final testing period, whereas, for Cohorts 3 and 7, there were 24 months across this period. One can compute the average monthly learning rate for each Cohort and subject by referring to the unconditional models and dividing the average learning rate coefficient by the total numbers of months mentioned above. For instance, from Table 6.35, one may derive an average monthly learning rate for Cohort 1 reading achievement of 3.76 scale score points by dividing the average learning rate coefficient of 75.27 by 20 months. For Cohort 3 math achievement (see Table 6.41), the average monthly learning rate is 0.90 (21.48 / 24 months).

Each level-3 model is tabulated on a separate page. The models are presented by cohort and subject. The unconditional and final conditional school models are provided.

Table 6.35 Three-Level Analysis of Student Reading Achievement within and between High Poverty Chapter 1 Schools (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, γ_{000}	471.53	3.77	125.23	
Average learning rate, γ_{100}	75.27	1.58	47.55	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 1				
Temporal variation, e_{tij}	996.58			
Level 2 Students within Schools (n=1,612)				
Student initial total reading scale score, r_{0ij}	2,062.34	1551	3,696.02	.000
Student reading learning rate, r_{1ij}	310.87	1551	2,426.26	.000
Level 3 Between Schools (n=61)				
School mean initial total reading scale score, u_{00j}	668.13	60	368.91	.000
School reading mean learning, u_{10j}	104.57	60	268.11	.000
Level-1 Coefficient	***Percentage of Variance Between Schools***			
Initial total reading scale score, π_{0ij}	24.47			
Reading learning rate, π_{1ij}	25.17			

Table 6.36 Three-Level Analysis of Student Reading Achievement within and between High Poverty Chapter 1 Schools (Cohort 1 Model with School-Level Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0ij}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	461.20	4.41		
Suburban School, γ_{001}	22.70	6.73	3.37	***
Rural School, γ_{002}	11.07	6.92	1.60	
Percent African American, γ_{003}	-0.53	0.15	-3.62	***
Percent Hispanic, γ_{004}	-0.33	0.13	-2.50	***
Percent Asian, γ_{005}	0.39	0.28	-1.37	
Days of School, γ_{006}	-0.74	0.45	-1.65	*
School Size, γ_{007}	-0.01	0.02	-0.33	
Staff Stability, γ_{008}	-9.71	5.06	-1.92	*
Model for learning rates, π_{1ij}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	80.57	2.06		
Suburban School, γ_{101}	-7.61	3.15	-2.42	**
Rural School, γ_{102}	-10.62	3.21	-3.13	***
Percent African American, γ_{103}	0.03	0.07	0.46	
Percent Hispanic, γ_{104}	0.14	0.06	2.23	**
Percent Asian, γ_{105}	0.25	0.13	1.92	*
Days of School, γ_{106}	0.47	0.22	2.15	**
School Size, γ_{107}	-0.01	0.01	-1.85	*
Staff Stability, γ_{108}	7.81	2.36	3.31	***

NOTE: * $p < .10$, ** $p < .05$, *** $p < .01$

Table 6.37 Three-Level Analysis of Student Math Achievement within and between High Poverty Chapter 1 Schools (Cohort 1 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial math concepts/applications scale score, γ_{000}	473.43	4.74	99.80	
Average learning rate, γ_{100}	73.22	2.35	31.20	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 1				
Temporal variation, e_{ij}	1,110.56			
Level 2 Students within Schools (n=965)				
Student initial math concepts/applications scale score, r_{0ij}	2,639.08	921	2,488.16	.000
Student math learning rate, r_{1ij}	64.04	921	1,070.82	.001
Level 3 Between Schools (n=44)				
School mean initial math concepts/applications scale score, u_{00j}	709.47	43	225.15	.000
School math mean learning, u_{10j}	188.28	43	377.93	.000
Level-1 Coefficient	***Percentage of Variance Between Schools***			
Initial math concepts/applications scale score, π_{0ij}	21.19			
Math learning rate, π_{1ij}	74.62			

Table 6.38 Three-Level Analysis of Student Math Achievement within and between High Poverty Chapter 1 Schools (Cohort 1 Model with School-Level Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0ij}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	451.84	5.99		
Suburban School, γ_{001}	22.70	10.02	2.27	**
Rural School, γ_{002}	35.82	9.56	3.75	***
Poverty Level, γ_{003}	0.00	0.28	0.00	
Days of School, γ_{004}	-1.01	0.52	-1.96	**
Planning Academic Programs, γ_{005}	16.29	6.81	2.39	**
Disciplinary Policy, γ_{006}	-29.96	9.36	-3.20	***
Coordination of Chapter 1 with Regular Program, γ_{007}	4.98	10.27	0.49	
Model for learning rates, π_{1ij}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	80.39	3.17		
Suburban School, γ_{101}	-4.13	5.25	-0.79	
Rural School, γ_{102}	-19.99	5.12	-3.91	***
Poverty Level, γ_{103}	-0.43	0.15	-2.93	***
Days of School, γ_{104}	0.53	0.27	1.99	*
Planning Academic Programs, γ_{105}	-2.19	3.58	-0.68	
Disciplinary Policy, γ_{106}	8.55	4.93	1.73	*
Coordination of Chapter 1 with Regular Program, γ_{107}	10.79	5.48	1.97	*

NOTE: * $p<.10$, ** $p<.05$, *** $p<.01$

Table 6.39 Three-Level Analysis of Student Reading Achievement within and between High Poverty Chapter 1 Schools (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total reading scale score, γ_{000}	664.28	3.59	185.29	
Average learning rate, γ_{100}	14.90	0.77	19.28	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 1				
Temporal variation, e_{ij}	471.61			
Level 2 Students within Schools (n=1,416)				
Student initial total reading scale score, r_{0ij}	1,395.82	1361	3,173.59	.000
Student reading learning rate, r_{1ij}	38.69	1361	1,638.07	.000
Level 3 Between Schools (n=55)				
School mean initial total reading scale score, u_{00j}	579.78	54	364.86	.000
School reading mean learning, u_{10j}	18.18	54	142.44	.000
Level-1 Coefficient	***Percentage of Variance Between Schools***			
Initial total reading scale score, π_{0ij}	29.35			
Reading learning rate, π_{1ij}	31.97			

Table 6.40 Three-Level Analysis of Student Reading Achievement within and between High Poverty Chapter 1 Schools (Cohort 3 Model with School-Level Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	661.17	3.88		
Percent African American, γ_{001}	0.11	0.12	1.00	
Poverty Level, γ_{002}	-0.63	0.23	-2.79	***
School Size, γ_{003}	-0.04	0.01	-3.39	***
Days of School, γ_{004}	-1.83	0.55	-3.31	***
Coordination of Chapter 1 with Regular Program, γ_{005}	-15.47	9.69	-1.60	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}				
Intercept, γ_{010}	16.71	0.97		
Percent African American, γ_{011}	-0.09	0.03	-3.03	***
Poverty Level, γ_{012}	0.03	0.06	0.56	
School Size, γ_{013}	0.01	0.00	2.19	**
Days of School, γ_{014}	0.23	0.15	1.49	
Coordination of Chapter 1 with Regular Program, γ_{015}	5.02	2.37	2.11	**

NOTE: * $p<.10$, ** $p<.05$, *** $p<.01$

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Table 6.41 Three-Level Analysis of Student Math Achievement within and between High Poverty Chapter 1 Schools (Cohort 3 Unconditional Model)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Average initial total math scale score, γ_{000}	672.21	3.14	214.09	
Average learning rate, γ_{100}	21.48	1.12	19.13	
Random Effect	***Variance Component***	***df***	***X^2***	***p value***
Level 1				
Temporal variation, e_{tij}	454.74			
Level 2 Students within Schools (n=1,263)				
Student initial total math scale score, r_{0ij}	1,352.85	1,212	3,415.23	.000
Student math learning rate, r_{1ij}	32.56	1,212	1,417.40	.000
Level 3 Between Schools (n=51)				
School mean initial total math scale score, u_{00j}	377.67	50	286.57	.000
School math mean learning, u_{10j}	46.18	50	293.76	.000
Level-1 Coefficient	***Percentage of Variance Between Schools***			
Initial total math scale score, π_{0ij}	21.82			
Math learning rate, π_{1ij}	58.65			

Table 6.42 Three-Level Analysis of Student Math Achievement within and between High Poverty Chapter 1 Schools (Cohort 3 Model with School-Level Predictors)

Fixed Effect	*Coefficient*	*se*	*t ratio*	
Model for initial math concepts & applications scale score, π_{0ij}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	679.54	3.13		
Suburban School, γ_{001}	-4.35	5.69	-0.77	
Rural School, γ_{002}	-25.19	5.72	-4.41	***
Poverty Level, γ_{003}	-0.92	0.16	-5.93	***
Percent Asian, γ_{004}	-0.18	0.27	-0.69	
School Size, γ_{005}	-0.03	0.01	-3.39	***
Collaborative Leadership/Shared Goals, γ_{006}	-8.82	5.97	-1.48	
Model for learning rates, π_{1ij}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{000}	21.30	1.53		
Suburban School, γ_{001}	-0.94	2.81	-0.34	
Rural School, γ_{002}	2.70	2.81	0.96	
Poverty Level, γ_{003}	0.14	0.08	1.85	*
Percent Asian, γ_{004}	0.32	0.13	2.54	**
School Size, γ_{005}	0.00	0.00	0.57	
Collaborative Leadership/Shared Goals, γ_{006}	5.72	2.90	1.97	*

NOTE: * $p < .10$, ** $p < .05$, *** $p < .01$

Section 7. Summary of Findings

These analyses were designed to investigate the student, instructional, and school attributes that were associated with longitudinal academic growth. Of special interest were those variables that were related to improved outcomes for students who participated in federal Chapter 1 math and reading services. In addition, from a procedural and methodological standpoint, this research effort provided an opportunity to explore the feasibility of performing a multi-level analysis with the *Prospects* data set. In our attempts to perform this research, we discovered limitations of the data that precluded the completion of some of the originally intended analyses. Nonetheless, several important relationships among instructional and school activities and student learning were revealed, which may have some implications for future policy.

The *Prospects* data set is a valuable resource for quantitative educational research. However, several limitations should be noted that may impact the generalizability of our findings and the practicality of further longitudinal research based on these data. First, most limitations stem from the substantial missing data across the various instruments within survey years, and from the considerable attrition of students across years. This project was not designed to formulate and implement a complex and complete multiple data imputation process. However, in order to undertake these analyses it was necessary to employ some basic imputation procedures to create longitudinal measures. Second, the data files did not contain longitudinal weights. Instead, we were forced to rely on yearly design weights. The combination of extensive missing data and the unavailability of longitudinal weights may have compromised the generalizability of the results to the national population of students and may have introduced some biases, which were not easily detectable.

Third, our statistical analyses revealed that in some instances, such as with Cohort 1 math achievement (see Table 6.5), a regression effect may have been operating. This effect is represented by a substantial negative correlation between students' pretest scores and their longitudinal learning rates. In other words, students who had initial low scores had a tendency to grow at faster rates. For instance, for Cohort 1 math achievement this correlation was -.32. A number of factors may contribute to this phenomenon, such as the unreliability of the pretest measure. Alternatively, this effect may be a natural occurrence, in that initial low achievers, especially in the early grades, tend to gain more from educational interventions. In any case, the reader should acknowledge that a given independent variable with a significant positive or negative relationship to initial status, which has the reverse relationship to longitudinal growth, may indicate a true effect of the predictor on growth, a potential measurement artifact, or some combination of both.

Results of the Two-Level Student Models

The student-level HLM models (see Section 6) assessed the associations among various student background characteristics and student math and reading achievement. In addition, these models included yearly Chapter 1 participation and various Chapter 1

participation patterns across the duration of the study. The tabled results indicated that the associations of the various predictors with initial status and growth varied depending on the particular subject and grade cohort considered. Certain variables, however, maintained consistent relationships to both math and reading achievement across cohorts.

Regardless of grade, students who were retained at any time during the study scored significantly lower on the math and reading pretest measures. However, the relationship between retention and academic growth varied across cohorts. Cohort 1 students who were retained did not grow at a different rate from non-retained students in math, but they learned reading at a slower rate than their counterparts. In general, though, retention of Cohort 3 and 7 students was associated with improved growth.

The race of the student tended to have a significant relationship to the intercept and some racial groups experienced consistently slower or accelerated growth rates in comparison to Caucasian students. Most notably, Latino and African American students from each cohort and in both subjects scored significantly lower than Caucasian students on the pretests. However, in all cases, Latino students grew at the same rate as their Caucasian counterparts. Cohort 1 African American students achieved at a faster rate than Caucasian students in math, but in the third and seventh grade cohorts they tended to grow at a slower rate. Asian Cohort 1 students had significantly steeper growth slopes than Caucasians, but this was not the case for the other cohorts. Perhaps most disconcerting was the academic growth of American Indians, who in five of six models began at the same pretest level as Caucasians but grew at a significantly lesser pace (the one exception being the Cohort 3 students in math). Given that the pretest levels of American Indians were comparable to Caucasians, this finding does not appear to be attributable to measurement artifacts.

Overall, gender effects on the intercepts and slopes were rather modest and inconsistent. For Cohort 1, boys grew at a slower rate than girls in reading, but no differences were found for either the reading intercepts or slopes for Cohorts 3 and 7. For math, boys from Cohorts 1 and 3 scored higher on the pretest, but Cohort 1 boys grew at the same rate as girls and Cohort 3 boys achieved at a slower rate. There were no gender differences for math in Cohort 7.

The most pronounced effect regarding the urbanicity of the student's school was found for rural students. In comparison to urban students, Cohort 1 rural students entered first grade at higher reading and math achievement levels, but grew at significantly slower rates in both subjects. No differences were found for Cohort 3, whereas Cohort 7 rural students grew at a faster rate than their urban counterparts.

The relationships between SES and achievement were consistent and in the expected direction. The most dramatic associations were found for Cohort 1. For both reading and math, the SES coefficients for the reading and math intercepts and slopes were positive and significant. SES was positively related to Cohort 3 students' initial status, but was not

related to growth in either reading or math. SES was a significant predictor of the Cohort 7 math intercepts and slopes, and was a significant positive predictor of the reading intercept.

We attempted to model a variety of student affective measures as predictors of initial status and achievement growth. With the exception of the student engagement factor, which was derived from teacher reports, all of these developed factors were obtained from student self-reports. Because Cohort 1 students were not administered questionnaires, the self-reported affective measures were not available for these students.

The teacher-reported student engagement measure was clearly the most important student-level predictor of achievement. Students scoring higher on this factor had significantly higher math and reading pretest scores across all three cohorts, and in all but one case the factor was significantly and positively associated to student learning rates. Not surprisingly, those students who were more attentive and motivated to learn indeed achieved at far superior levels. For example, for Cohort 3 reading (see Table 6.12), students who were one standard deviation above the mean for the student engagement measure gained 3.19 months of achievement more than those students at the mean (see Section 6 for explanation of average monthly learning rates). The only consistent effects for the student self-reported factors were found for the subject-specific self-efficacy measures. Those Cohort 3 and 7 students with higher reading and math self-efficacy factor scores had significantly higher pretest scores for both subjects, but self-efficacy was not related to achievement growth.

In addition to the substantive interest in the relationships between the student background attributes and achievement, these variables served as covariates in the analyses of the longitudinal consequences of Chapter 1 participation. We operationalized participation in federal Chapter 1 math and reading programs in two ways: (1) yearly subject-specific participation, regardless of participation status during the other years, and; (2) the three-year pattern of subject-specific participation (e.g., received Chapter 1 in year 1, did not receive Chapter 1 in year 2, received program in year 3). Participation in other federal, state, and local compensatory programs was operationalized by yearly subject-specific participation "dummy codes." Because our interest was in relationships between Chapter 1 participation and achievement, the other compensatory program flags served, primarily, as covariates.

Because Chapter 1 services are targeted toward low-achievers, generally yearly Chapter 1 participation was associated with a lower pretest measure. This relationship was more consistent as the year of participation approached the year of the pretest measure. Therefore, those students who participated in Chapter 1 during years 1 and 2 of the study tended to have lower initial test scores than those students who participated during year 3 of the study. A similar association was found for the participation pattern variables. Namely, those students participating in the years 1 and/or 2 tended to have lower pretest measures than students who first received services in year 3. Those students receiving math and reading services during each of the three years typically had the lowest initial status.

Regarding longitudinal growth, there were no systematic and consistent relationships between Chapter 1 participation and learning. However, when considering the yearly participation variables, there was a tendency for the middle year (1992) participation indicator to be positively correlated with reading and math growth. The participation pattern indicators revealed that the more advantageous patterns tended to be those where students received Chapter 1 services in years 1 and/or 2 but not in year 3. This relationship was especially pronounced for Cohorts 1 and 3. The average monthly reading learning rate was 3.79 scale score points (see Section 6 for explanation of average monthly learning rates) for Chapter and non-Chapter 1 Cohort 1 students. From Table 6.4, it may be seen that the beta coefficient for the Chapter 1 R/E/LA two-year participation pattern "10" was 5.78, which translates into a 1.5 months (5.78 / 3.79) advantage, in comparison to non-Chapter 1 students, over the course of the study for those students experiencing this Chapter 1 participation pattern. For Cohort 3 math, those students who experienced the three-year Chapter 1 pattern of "110" gained a considerable 8.7 months (7.65 / 0.88) beyond their non-Chapter 1 peers over the 24 month longitudinal period. Finally, those students participating in all three years had a propensity to learn at a significantly slower rate. For instance, Cohort 1 R/E/LA Chapter 1 students fell nearly 2 months (-7.53 / 3.79 = 1.99 months) behind their non-Chapter 1 peers over the duration of the study. Nevertheless, some results should be interpreted with caution as the student sample sizes for particular participation patterns for some cohorts were rather small.

There may be three plausible explanations for the positive results found for early Chapter 1 participation. First, it could be argued that early participation and later non-participation occurred because the student required Chapter 1 due to low initial status but no longer required the intervention due to improved achievement performance. In other words, these students had relatively steeper growth trajectories. Second, there may be a regression effect due to relatively sizable negative correlations between initial status and learning rates. Finally, it may be argued that children benefitted from Chapter 1 and no longer required services in later years because the program enabled them to improve their performances.

Close examination of the results seems to dispel some concern that a regression effect was in operation. First, virtually all of the Chapter 1 yearly and pattern indicators were negatively related to the intercept. If a regression artifact occurred, then all indicators should be positively related to learning rates, which is not the case. Secondly, and related to the first point, students with the lowest initial achievement status were those who participated in Chapter 1 during all three years of the study. However, as discussed, these students tended to have slower learning rates. We surmise that the other two phenomena, the selection effect and "true" effect, both contributed to the positive associations that were found. Unfortunately, it was not possible to partition the influences of these separate relationships.

Results of the Two-Level Instructional Effects Models

Table 7.1 below documents those instructional attributes that were significant predictors of student math and reading achievement growth. As evident from the table, few

Table 7.1 Statistically Significant Relationships Between Instructional Attributes and Learning Rates

Instructional Attributes	Factors/Variables	Grade Cohort and Subject					
		Cohort 1		Cohort 3		Cohort 7	
		Reading	Math	Reading	Math	Reading	Math
Teacher's Instructional Approach	Teacher-led, Basic-skills Oriented Approach						
	Regular classroom		** (+)				
	Chapter 1		* (+)	* (+)			
	Student-centered, Advanced-skills Oriented Approach						
	Regular classroom		** (-)				
	Interactions Between Chapter 1 & Regular Instructional Approaches						
	Chapter 1 Basic-Skills X Chapter 1 Advanced-Skills	** (-)					
	Regular Classroom Advanced-Skills X Chapter 1 Basic-Skills	** (+)					
Instructional Grouping	Percent Chapter 1 Whole-class Instruction	** (-)					** (-)

NOTE: * $p < .05$, ** $p < .01$; Sign in parentheses (+, -) indicates direction of effect.

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variables had a significant and consistent association with student learning. The one most reliable finding was that the teacher-led, basic-skills oriented approach, for both Chapter 1 and regular instruction, was significantly and positively related to academic gains, especially for Cohort 1 and 3. The two student-centered, advanced-skills oriented approach variables were not positively and significantly related to improved academic growth in any case. However, this is not to say that this type of instructional approach does not contribute to improved student learning. In fact, the largest positive reading coefficient was found for the situation in which the regular Cohort 1 teachers emphasized student-centered, advanced skills activities and the Chapter 1 teachers emphasized a teacher-led, basic-skills instructional approach. In these circumstances it appears that Chapter 1 students profited from both types of instruction, but only in those cases when the alternate approaches were offered by different teachers. Finally, because the CTBS/4 is a standardized test of basic skills, the teacher-led, basic-skills approach may hold an apparent advantage simply due to the nature of the outcome measure.

In one-third of the models, a higher frequency of reported use of Chapter 1 whole-class instruction was associated with lower growth rates. However, the other instructional grouping variables, frequency of instruction in an individualized or small-group format, were not significantly related to growth. Therefore, although the data indicated a negative relationship between the frequency of whole-class instruction and learning rates, they do not suggest the potential for a more efficacious grouping practice.

There are several potential explanations for the limited number of statistically significant instructional predictors. As discussed in Section 5, the instructional effects analyses were based on small samples due to extensive missing data. These small sample sizes increased the standard errors of the predictors and limited the statistical power of our hypothesis tests. Also, the instructional analyses were conservative in the sense that we included all significant student background attributes as covariates. Finally, the only available data on instructional practices were teacher self-reports. These self-reported data may have introduced measurement error attributable to the social desirability of particular responses. Most likely, all of these factors contributed to the limited number of significant instructional predictors.

Results of the Three-Level School Effects Models

As noted in Section 5, several data limitations compromised the three-level school effects models. First, no analyses were performed for Cohort 7 because most students graduated to a high school during the ninth grade, which corresponded to year three (1993) of the study. Although some "out-movers" who were enrolled in new schools during 1993 were followed, these new schools contained too few sampled students to estimate reliable within-school student achievement parameters. Second, although we had intended to model the variability of the Chapter 1 effect at level three as predicted by various school attributes, we discovered that there were not adequate numbers of Chapter 1 and non-Chapter 1 students

to yield reliable within-school estimates of the Chapter 1 effect. That is, it was not possible to develop reliable within-school Chapter 1 slopes for an adequate number of schools.

Consequently, due to missing student and school data, it was not possible to perform three-level analyses that focused specifically on either the relationships of school attributes to the within-school Chapter 1 effects or on the between school Chapter 1 effects. However, there were adequate numbers of Cohort 1 and 3 high-poverty (i.e., over 50 percent poverty rate) Chapter 1 schools that contained sufficient numbers of Chapter 1 and non-Chapter 1 students to perform three-level analyses. These schools contained high percentages of Chapter 1 students, and those students who did not receive the program were similarly at-risk for student failure. Therefore, our school effects models assessed the impact of the various school-level attributes on the growth rates of both Chapter 1 and non-Chapter 1 students in high-poverty schools.

The overall results of the school effects models tended to substantiate the original hypotheses elaborated in Section 1. Also, the models revealed several school compositional attributes that appeared to be related to student achievement in high-poverty schools. As was the case with other models, different attributes were important predictors depending upon the cohort and subject considered. However, again, some school attributes were more consistently predictive of achievement growth across both subjects and cohorts (see Table 7.2).

Days of school, urbanicity, and the racial composition of high-poverty school were the most consistent school compositional variables related to learning rates. For both math and reading learning rates for Cohort 1 students, longer school years were positively associated with greater school mean growth trajectories. For instance, one more day of school for Cohort 1 schools translated into 0.13 months of additional reading growth. Therefore, the model would predict that an additional ten days of school, or two weeks of schooling, would be associated with a 1.3 month achievement advantage. Results were very similar for the Cohort 1 math analysis. Also, Cohort 1 rural schools contained students who grew at significantly slower rates in math and reading than urban schools. Suburban Cohort 1 schools had students with slower reading learning rates than urban schools. Although suburban and rural schools tended to serve students who entered first grade at higher achievement levels than urban schools' students, these high-poverty schools that were situated outside of urban areas did not perform well in terms of student longitudinal achievement.

With regard to the racial distribution of schools, Cohort 1 high-poverty schools with higher concentrations of Asian students were more likely to have greater growth rates, and one model suggested that schools with greater percentages of Latino students tended to have steeper growth trajectories. However, this latter association may have been influenced by regression effects, as Cohort 1 schools with greater concentrations of Latino students tended to have significantly lower mean initial status. In Cohort 1, greater percentages of African-American students were related to significantly lower reading pretest scores, and Cohort 3

Table 7.2 Statistically Significant Relationships Between School Attributes and Learning Rates

School Attributes	Factors/Variables	Grade Cohort and Subject			
		Cohort 1		Cohort 3	
		Math	Reading	Math	Reading
School Compositional Attributes	School Size		* (-)		** (+)
	Days of School	* (+)	** (+)		
	Urbanicity				
	1. Suburban		** (-)		
	2. Rural	*** (-)	*** (-)		
	Poverty Level	*** (-)		* (+)	
	Racial Distribution				
	1. Percent Asian	** (+)	* (+)		
	2. Percent African American				*** (-)
	3. Percent Hispanic		** (+)		
School-Site Leadership	Principal Leadership			* (+) G	
	Disciplinary Policy	* (+)			
Collaboration and Consensus	Goal Consensus			* (+) G	
	Staff Stability		*** (+)		
	Staff Influence on School Policy			* (+) G	
Coordination of Chapter 1 with the Regular School Program	Consulting other Staff about Evaluating Student Progress	* (+) G			** (+) G
	Coordination of Chapter 1 with other School Services	* (+) G			** (+) G
	Coordination of Materials	* (+) G			** (+) G

NOTE: * $p<.10$, ** $p<.05$, *** $p<.01$; Sign in parentheses (+, -) indicates direction of effect; The notation "G" indicates that this variable was a component of a global measure rather than the specific factor (see pp. 25-26 for a description of global school measures).

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schools with greater concentrations of African-American students had significantly lower mean reading learning rates.

The school structural and organizational attributes that supported improved rates of student learning tended to be the global indicators, rather than the specific factors considered independently. These global variables may more accurately reflect the true interdependence among various school-level attributes. This may indicate that high-poverty schools attempting to improve student achievement should not emphasize change of discrete aspects of their structures and organizations, but rather need to view school improvement in a wholistic manner. The promising findings for the global Coordination of Chapter 1 with the Regular School Program factor indicated that schools also should consider the wholistic effects of the total educational program. When supplemental Chapter 1 services were more aligned and integrated with the regular school program, all students within these schools responded with accelerated growth rates. For instance, for Cohort 3 reading (see Table 6.40), students who were in schools that were one standard deviation above the mean on the Coordination of Chapter 1 with the Regular Program factor gained 8.1 months of reading learning beyond those students in schools that were at the mean on the coordination factor.

Criticisms of this type of process-product research have suggested that it may be insensitive to varying contexts, which may shape relationships in different ways. To address these concerns we performed separate analyses by grade cohort (i.e., Cohort 1, 3 and 7) and by subject (i.e., math and reading). This approach appeared to be justified, in that the significant relationships among student, instructional, and school attributes varied across these contexts. Nevertheless, we did find some relationships that appeared to operate consistently regardless of the particular subject or grade cohort. Further, our analytical methods assumed direct, linear relationships among student, instructional, and school attributes and academic growth. Therefore, non-significant findings for particular relationships do not necessarily indicate that the student, instructional, or school attribute is unimportant for improved longitudinal achievement. In some cases, these variables may support learning in other, indirect ways that were not measured or interpreted by this series of analyses.

To summarize, the results of this study supported some features of the effective schools model and the idealized school-level attributes advocated by proponents of systemic reform, however, some features of these perspectives were not associated with improved student academic performance. The contention that a focus on student-centered, advanced-skills instruction as a means for improving student learning was not supported, but again, the outcome measure emphasized student competency in the basic skills. The approach of offering at-risk students teacher-directed basic skills within the Chapter 1 program and student-centered, advanced skills within the regular classroom appeared to be one promising strategy for primary-grade students. As expected, schoolwide alignment and coordination of Chapter 1 and the regular program was related to increased educational growth. But school-level autonomy, in and of itself, did not influence longitudinal achievement. Notwithstanding, schools that integrated collaborative principal/teacher leadership with a

clear mission shared by all staff were generally more likely to contain students with improved learning rates. Therefore, it appears that some elements of the systemic reform perspective are more instrumental than others for improving the educational opportunities and outcomes for at-risk students attending high-poverty schools.

Section 8. Policy Implications

Perhaps the greatest implication of our results was that a number of factors that are within the control of the schools, and potentially influenced by current and future Title I policy, were related to student achievement. Of the malleable school features, some pertain specifically to the individual student, some are related to teacher instruction, and others apply to the organizational and structural features of the school. Therefore, effective intervention strategies may be designed to improve educational opportunity and outcomes at all three levels. Our analyses, which were specific to academic subject and grade cohort, indicated different patterns of association between these key variables and student achievement. Therefore, our results did not yield a global and comprehensive policy model. Nevertheless, several more consistent findings across grade cohorts and subjects were identified.

Although it may be desirable to provide policymakers and other stakeholders with direct, summative conclusions regarding the overall effectiveness of federal compensatory education programs, our results revealed that there are no straightforward and simple answers. In some situations, Chapter 1 participation was positively related to student academic growth, and in other cases it was not. There were, however, some participation trends that yielded greater longitudinal student growth. The participation pattern indicators revealed that growth was more evident when students received Chapter 1 services in years 1 and/or 2 but not in year 3. This relationship was especially pronounced for Cohort 1. The less frequently employed approach of serving students for three successive years did not appear to be an effective educational strategy. Instead, those students who participated in Chapter 1 early during the three-year longitudinal period and who subsequently "graduated" out of the program tended to benefit the most. Therefore, current Title I services may be more effectively conceptualized and implemented as temporary, compensatory interventions rather than as sustained forms of providing educational opportunities.

Other features of regular and Chapter 1 programs that were related to student outcomes have several policy implications. First, without strong collaborative leadership provided by both principals and teachers, efforts to grant high-poverty schools greater latitude in educational decisionmaking are not likely to improve student learning. Second, early elementary programs that operate on a longer academic year may improve learning within high-poverty schools. Encouraging the development of Title I programs that offer young children additional learning opportunities beyond the regular school year through extended year services may hold promise in this regard.

Third, our results indicated that Title I and regular teachers should not be encouraged to abandon teacher-led, basic-skills instruction in favor of more student-centered, advanced-skills oriented approaches. This does not imply that teachers should decontextualize instruction by providing a curriculum that focuses exclusively upon remediating basic skills deficits through drill and practice. In some cases, it appears that at-risk students need to be challenged academically with both basic and advanced skills, delivered within a balanced and meaningful instructional framework. The best strategy, mainly for younger students, may be

one in which the regular classroom teacher offers a student-centered, advanced skills approach and the Title I teacher complements that instruction with an approach that is more teacher-led and basic-skills oriented. This balance of instructional approaches may expand students' educational experiences and facilitate improved learning of a more challenging curriculum.

Fourth, regardless of the particular instructional approach that the Title I teacher favors, apparently it should not be delivered through a predominantly whole-class grouping format. However, the results did not indicate that more frequent use of individualized or small-group Chapter 1 instructional grouping arrangements held distinct advantages. As a caveat, the reader should be mindful of the fact that all these instructional approaches and arrangements were related to an outcome measure that primarily assessed basic skills achievement.

At the school-level, the balance of instructional efforts noted above may require all staff to develop more coordinated and complementary supplemental and regular classroom services. Title I and regular teachers should work together to develop a plan with the overall goals of both bolstering at-risk students' academic growth trajectories and avoiding their long-term Title I placements. This plan should include frequent collaborative evaluations of student academic progress, the use of similar instructional materials in both settings, and the overall integration of Title I with other school services.

As mentioned previously, one of the most consistent and important predictors of student learning was student engagement. Specifically, those students who are attentive in class, involved in their school work, and working up to their potentials gained the most. Taken together, these elements of engagement indicate that students who are more involved and who identify with their school experiences are more prone to be academically successful. In contrast, our results indicated that programs designed to affect students' self-concepts may not be a viable option for improving achievement. Instead, Title I and other federal programs should attempt to facilitate students' identification with and engagement in their school experiences.

Finally, the outcomes of this study raise grave concerns for the schooling of young, at-risk, rural students, and Native American students. Perhaps the focus on concentrating compensatory funds and services in urban schools, which enroll substantial numbers of at-risk students, has had an inadvertent deleterious effect on the services offered through rural schools. Although concerns for improving conditions in urban schools and for other minority groups have been justifiable, our findings indicate that further explorations of the potential problems faced by rural schools and Native American students are warranted.

As stated at the outset, these analyses were designed to respond to several of the central issues concerning the idealized model for school improvement implied by systemic reform, namely: (1) What effects do curricula and instruction that place more emphasis on higher-order skills have on students' outcomes? (2) What effects do schoolwide alignment

and coordination of Chapter 1 and the regular program have on students' educational growth? (3) What effects do increased school-level autonomy and participatory staff decision-making have on the learning outcomes for students? First, the contention that a focus on student-centered, advanced-skills instruction as a means for improving Chapter 1 students' learning was not supported. However, again, the outcome measure emphasized student competency in the basic skills. Second, as expected, schoolwide alignment and coordination of Chapter 1 and the regular program was related to increased educational growth. Third, greater school-level decision-making autonomy, in and of itself, did not influence longitudinal achievement. However, in some cases, schools that integrated collaborative principal/teacher leadership with a clear mission shared by all staff were generally more likely to contain students with improved learning rates.

Nonetheless, the instructional and school attributes were not consistent predictors of achievement across cohorts and subjects. Some relationships that were more consistent and pronounced highlighted the interdependence of instructional and school attributes. For instance, when student-centered, advanced-skills instruction was related to achievement, it depended on the availability of teacher-led, basic-skills instruction within the Chapter 1 classroom. Similarly, the significance of the global school coordination and school leadership factors indicated that schools may need to consider more concentrated, wholistic reform efforts, rather than concentrating on one or two isolated attributes for improvement. These analyses of the *Prospects* data raised implications that seem to merit further consideration by current Title I policymakers and stakeholders, and future investigation by educational researchers.

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Appendix A: Factor Loadings for Student Composite Variables

Tables 2.2 through 2.9 below show the items representing each composite student factor along with the loadings for each year. Independent results are provided for the Student Questionnaire, the Student Profile instrument, and the Parent Questionnaire. The item factor loadings for each year also are displayed in the table. Yearly item loadings that are noted "NA" indicate that the item was not available from the *Prospects* questionnaires that year.

Table 2.2 Student Background Attributes; Student Questionnaire; Cohort 3

Factor	Student Questionnaire Item	Year		
		1991	1992	1993
Self-Concept	82A I feel good about myself	.47	.45	.52
	82D I am able to do things as well as most other people	.36	.40	.43
	82F I am satisfied with myself	.45	.42	.50
	82G I certainly feel useless at times (Reversed)	.36	.47	.52
	82H At times I think I am no good at all (Reversed)	.44	.51	.54
	82J I feel I don't have much to be proud of (Reversed)	.44	.48	.50
	83A Other students see me as popular	.52	.49	.50
	83B Other students see me as a good student	.68	.67	.67
	83C Other students see me as important	.64	.61	.62
	83D Other students see me as a trouble-maker (Reversed)	.48	.48	.41
Locus of Control	82B If I work really hard, I will do well in school	.64	.63	.57
	82C To do well in school, good luck is more important than hard work (Reversed)	.65	.66	.63
	82E Every time I try to get ahead, something or somebody stops me (Reversed)	.52	.60	.66
	82I When I make plans, I'm almost certain I can make them work	.30	.31	.42
Math Self-Efficacy	21 Self-assessed math ability	.77	.78	.79
	22A Math classwork was hard to learn (Reversed)	.69	.69	.71
	22B I had trouble keeping up with the math homework (Reversed)	.57	.61	.60
	22D I would do much better in math if I had more help (Reversed)	.73	.72	.70

Factor	Student Questionnaire Item	Year		
		1991	1992	1993
Reading Self-Efficacy	10 Self-assessed reading ability	.76	.75	.75
	11A Reading classwork was hard to learn (Reversed)	.61	.62	.61
	11B I had trouble keeping up with the reading homework (Reversed)	.54	.57	.57
	11D I would do much better in reading if I had more help (Reversed)	.76	.73	.73
Attitude Toward School	11C Reading class was fun	.57	.65	.64
	22C Math class was fun	.56	.64	.64
	43 Feelings about going to school everyday	.62	.61	.19
	44A You feel it is OK to be late for school (Reversed)	.53	.45	.73
	44B You feel it is OK to skip school for the whole day (Reversed)	.65	.54	.80
	44C You feel it is OK to be absent from school a lot (Reversed)	.64	.56	.82
Parent Involvement	65A Parents went to school for parent-teacher conference	.33	.32	.24
	65B Parents went to school to talk with teacher or principal	.32	.25	.21
	65C Parents visited classroom	.46	.48	.48
	65D Parents attended school event you were in	.53	.56	.58
	65E Parents attended school event with you	.54	.57	.58
	67A Talked to parents about school activities that interest you	.63	.65	.67
	67B Talked to parents about things you have studied in class	.59	.63	.68
	67C Talked to parents about problems you are having with school subjects	.46	.52	.56
	69A Parents help with homework	.25	.29	.39
	69B Parents check to see if done homework	.24	.27	.34
	76A Go to public library with parents	.46	.47	.49
	76B Go to concerts or other musical events with parents	.48	.52	.54
	76D Go to museums, the zoo, the aquarium with parents	.48	.46	.47

Table 2.3 Student Background Attributes; Student Questionnaire; Cohort 7

Factor	Student Questionnaire Item	Year		
		1991	1992	1993
Self-Concept	80A I feel good about myself	.68	.71	.72
	80D I feel I'm a person of worth, the equal of other people	.65	.69	.68
	80E I am able to do things as well as most other people	.62	.62	.70
	80H I am satisfied with myself	.69	.71	.72
	80I I certainly feel useless at times (Reversed)	.50	.55	.51
	80J At times I think I am no good at all (Reversed)	.53	.58	.54
	80L I feel I don't have much to be proud of (Reversed)	.52	.57	.52
	81A Others see me as popular	.44	.45	.44
	81B Others see me as athletic	.42	.39	.40
	81C Others see me as good student	.50	.48	.49
	81D Others see me as important	.57	.56	.59
	81E Others see me as a trouble-maker (Reversed)	.23	.20	.15
Locus of Control	80B I don't have enough control over the direction my life is taking (Reversed)	.69	.69	.73
	80C In my life, good luck is more important than hard work for success (Reversed)	.71	.74	.72
	80F Every time I try to get ahead, something or somebody stops me (Reversed)	.70	.73	.75
	80G My plans hardly ever work out so planning only makes me unhappy (Reversed)	.75	.76	.79
	80K When I make plans, I am almost certain I can make them work	.18	.19	.15
	80M Chance and luck are very important for what happens in my life (Reversed)	.58	.62	.65
Math Self-Efficacy	18 Self-assessed math ability	.82	.82	.82
	25A Math class material was difficult to learn (Reversed)	.72	.74	.75
	25B I had trouble keeping up with the math homework (Reversed)	.62	.62	.62
	25D I would do much better in math if I had more help (Reversed)	.68	.67	.67
	26 Consequence of working hard in math	.70	.69	.72

Factor	Student Questionnaire Item	Year		
		1991	1992	1993
Reading Self-Efficacy	19 Self-assessed reading ability	.58	.57	.57
	20A Reading class material was difficult to learn (Reversed)	.65	.66	.67
	20B I had trouble keeping up with the reading homework (Reversed)	.58	.60	.60
	20D I would do much better in reading if I had more help (Reversed)	.67	.66	.68
	21 Consequence of working hard in reading	.65	.67	.70
Attitude Toward School	20C Reading class was fun	.49	.44	.59
	25C Math class was fun	.47	.41	.57
	32A You feel it is OK to be late for school (Reversed)	.60	.64	NA
	32B You feel it is OK to cut a couple of classes (Reversed)	.67	.70	NA
	32C You feel it is OK to skip school for the whole day (Reversed)	.67	.71	NA
	78A I generally like coming to school	.63	.64	.74
	78B I am often bored in school (Reversed)	.46	.51	.58
	78C My education will make a difference in my life	.47	.45	.53
Parent Involvement	61A Parents went to school to pick up report card	.18	.23	.19
	61B Parents went to school for informal talk with teacher or principal	.20	.22	.18
	61C Parents visited classroom	.33	.35	.29
	61D Parents volunteered for school projects/trips	.40	.39	.39
	61E Parents attended school event in which you participated	.48	.46	.49
	61F Parents attended a school event with you	.49	.52	.53
	61G Parents went to school for parent-teacher conference	.24	.26	.23
	63A Talked to parents about choosing school classes or programs	.59	.68	.75
	63B Talked to parents about school activities/events of interest to you	.66	.71	.77
	63C Talked to parents about things you have studied in class	.68	.73	.79
	63D Talked to parents about problems you are having with school subjects	.60	.65	.72
	63G Talked to parents about attending college/other schools after high school	.52	.60	.69
	66A Parents help with homework	.56	.60	.62
	66B Parents check to see if done homework	.50	.52	.57
	75A Go to public library with parents	.50	.52	NA
	75B Go to concerts with parents	.50	.50	NA
	75C Go to museums with parents	.53	.52	.47

Table 2.4 Student Background Attributes; Student Profile Questionnaire; Cohort 1

Factor	Student Profile Item	Year	
		1992	1993
Student Engagement	3 Working up to potential	.59	.61
	9B Attention Span	.88	.88
	9C Motivation to learn	.84	.84
	10A Completes homework assignments	.72	.73
	10B Completes seatwork	.83	.82
	10C Pays attention in class	.87	.87
	10E Asks questions in class	.55	.55
	10F Volunteers answers/takes part in class discussion	.63	.63
	11A Works hard at school	.86	.85
	11C Cares about doing well at school	.81	.82

Table 2.5 Student Background Attributes; Student Profile Questionnaire; Cohort 3

Factor	Student Profile Item	Year		
		1991	1992	1993
Student Engagement	3 Working up to potential	.62	.63	.63
	9B Attention Span	.84	.89	.89
	9C Motivation to learn	.88	.84	.83
	10A Completes homework assignments	.79	.83	.84
	10B Completes seatwork	.83	.83	.83
	10C Pays attention in class	.87	.87	.87
	10E Asks questions in class	.51	.52	.53
	10F Volunteers answers/takes part in class discussion	.61	.62	.62
	11A Works hard at school	.86	.87	.86
	11C Cares about doing well at school	.84	.84	.84

Table 2.6 Student Background Attributes; Student Profile Questionnaire; Cohort 7

Factor	Student Profile Item	Year		
		1991	1992	1993
Student Engagement	3 Working up to potential	.69	.67	.71
	9B Attention Span	.85	.90	.90
	9C Motivation to learn	.90	.84	.83
	10A Completes homework assignments	.87	.87	.88
	10B Completes seatwork	.85	.84	.85
	10C Pays attention in class	.88	.87	.87
	10E Asks questions in class	.55	.56	.57
	10F Volunteers answers/takes part in class discussion	.62	.62	.62
	11A Works hard at school	.88	.88	.88
	11C Cares about doing well at school	.87	.86	.86

Table 2.7 Student Background Attributes; Parent Questionnaire; Cohort 1

Factor	Parent Questionnaire Item	Year	
		1992	1993
SES	76C Respondent's educational level	.82	.86
	80C Respondent's occupational prestige	.68	NA
	96C Spouse's educational level	.80	.85
	82C Spouse's occupational prestige	.70	NA
	100C Household income	.67	.77
	103 Composite of educational resources in the home	.65	NA

Table 2.8 Student Background Attributes; Parent Questionnaire; Cohort 3

Factor	Parent Questionnaire Item	Year		
		1991	1992	1993
SES	76C Respondent's educational level	.81	.81	.85
	80C Respondent's occupational prestige	.70	.68	NA
	96C Spouse's educational level	.83	.82	.86
	82C Spouse's occupational prestige	.71	.69	NA
	100C Household income	.66	.68	.76
	103 Composite of educational resources in the home	.63	.67	NA

Table 2.9 Student Background Attributes; Parent Questionnaire; Cohort 7

Factor	Parent Questionnaire Item	Year		
		1991	1992	1993
SES	76C Respondent's educational level	.81	.81	.86
	80C Respondent's occupational prestige	.71	.72	NA
	96C Spouse's educational level	.81	.81	.85
	82C Spouse's occupational prestige	.71	.72	NA
	100C Household income	.66	.67	.76
	103 Composite of educational resources in the home	.62	.62	NA

Appendix B: Test Score Imputation Models

Table 2.10 Cohort 1; Math Concepts/Applications Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSMCA(1) N: 6271 MULTIPLE R: 0.716

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	58.603	0.000	9.321	0.000
AMERIND	10.126	0.018	1.976	0.048
ASIAN	-17.455	-0.048	-5.412	0.000
BLACK	-15.413	-0.097	-9.988	0.000
LATINO	-12.001	-0.057	-6.159	0.000
SSMCA(2)	0.395	0.408	31.551	0.000
SSMCA(3)	0.324	0.320	24.428	0.000
OTHRRACE	-12.037	-0.016	-1.844	0.065

Table 2.11 Cohort 1; Math Concepts/Applications Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSMCA(2) N: 6271 MULTIPLE R: 0.773

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	66.433	0.000	11.307	0.000
AMERIND	-0.147	-0.000	-0.031	0.976
ASIAN	0.800	0.002	0.264	0.792
BLACK	-4.620	-0.028	-3.171	0.002
LATINO	-6.568	-0.030	-3.588	0.000
SSMCA(1)	0.347	0.336	31.551	0.000
SSMCA(3)	0.520	0.498	46.392	0.000
OTHRRACE	-4.466	-0.006	-0.730	0.466

Table 2.12 Cohort 1; Math Concepts/Applications Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSMCA(3) N: 6271 MULTIPLE R: 0.765

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	227.701	0.000	45.558	0.000
AMERIND	-18.694	-0.033	-4.008	0.000
ASIAN	17.079	0.048	5.815	0.000
BLACK	-14.197	-0.091	-10.101	0.000
LATINO	-4.474	-0.021	-2.514	0.012
SSMCA(2)	0.491	0.514	46.392	0.000
SSMCA(1)	0.269	0.272	24.428	0.000
OTHRRACE	9.500	0.013	1.597	0.110

Table 2.13 Cohort 1; Total Reading Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSTR(1) N: 6324 MULTIPLE R: 0.670

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	155.653	0.000	27.350	0.000
AMERIND	3.983	0.008	0.815	0.415
ASIAN	-26.198	-0.081	-8.576	0.000
BLACK	-22.533	-0.158	-15.643	0.000
LATINO	-23.105	-0.121	-12.449	0.000
SSTR(2)	0.452	0.481	33.302	0.000
SSTR(3)	0.119	0.141	9.622	0.000
OTHRRACE	-26.144	-0.038	-4.059	0.000

Table 2.14 Cohort 1; Total Reading Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSTR(2) N: 6324 MULTIPLE R: 0.803

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	67.357	0.000	13.263	0.000
AMERIND	0.377	0.001	0.090	0.928
ASIAN	4.669	0.014	1.777	0.076
BLACK	3.249	0.021	2.588	0.010
LATINO	-0.150	-0.001	-0.093	0.926
SSTR(1)	0.331	0.310	33.302	0.000
SSTR(3)	0.533	0.593	64.624	0.000
OTHRRACE	11.047	0.015	2.003	0.045

Table 2.15 Cohort 1; Total Reading Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSTR(3) N: 6324 MULTIPLE R: 0.773

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	154.772	0.000	26.817	0.000
AMERIND	-16.031	-0.026	-3.242	0.001
ASIAN	6.215	0.016	2.000	0.046
BLACK	-16.179	-0.096	-10.993	0.000
LATINO	-6.858	-0.030	-3.611	0.000
SSTR(2)	0.746	0.671	64.624	0.000
SSTR(1)	0.122	0.103	9.622	0.000
OTHRRACE	-8.727	-0.011	-1.337	0.181

Table 2.16 Cohort 3; Total Math Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSTM(1) N: 6141 MULTIPLE R: 0.776

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	104.809	0.000	15.552	0.000
AMERIND	-6.663	-0.015	-1.823	0.068
ASIAN	-4.564	-0.021	-2.589	0.010
BLACK	-9.243	-0.078	-8.968	0.000
LATINO	-8.882	-0.073	-8.483	0.000
SSTM(2)	0.505	0.495	39.744	0.000
SSTM(3)	0.313	0.298	24.273	0.000
OTHRRACE	-7.191	-0.016	-1.941	0.052

Table 2.17 Cohort 3; Total Math Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSTM(2) N: 6141 MULTIPLE R: 0.817

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	90.055	0.000	14.898	0.000
AMERIND	2.381	0.005	0.727	0.467
ASIAN	7.341	0.035	4.655	0.000
BLACK	-4.846	-0.042	-5.228	0.000
LATINO	-4.625	-0.039	-4.913	0.000
SSTM(1)	0.405	0.414	39.744	0.000
SSTM(3)	0.461	0.449	43.690	0.000
OTHRRACE	0.911	0.002	0.274	0.784

Table 2.18 Cohort 3; Total Math Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSTM(3) N: 6141 MULTIPLE R: 0.780

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	170.267	0.000	27.752	0.000
AMERIND	-6.467	-0.015	-1.868	0.062
ASIAN	4.324	0.021	2.589	0.010
BLACK	-1.874	-0.017	-1.908	0.056
LATINO	0.994	0.009	0.997	0.319
SSTM(2)	0.515	0.529	43.690	0.000
SSTM(1)	0.280	0.294	24.273	0.000
OTHRRACE	1.056	0.002	0.301	0.764

Table 2.19 Cohort 3; Total Reading Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSTR(1) N: 6242 MULTIPLE R: 0.807

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	89.075	0.000	14.293	0.000
AMERIND	5.254	0.012	1.550	0.121
ASIAN	-9.280	-0.042	-5.462	0.000
BLACK	-3.502	-0.028	-3.382	0.001
LATINO	-7.369	-0.058	-7.090	0.000
SSTR(2)	0.512	0.491	39.274	0.000
SSTR(3)	0.333	0.338	26.939	0.000
OTHRRACE	-6.471	-0.013	-1.754	0.079

Table 2.20 Cohort 3; Total Reading Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSTR(2) N: 6242 MULTIPLE R: 0.844

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	113.437	0.000	21.312	0.000
AMERIND	-3.837	-0.009	-1.300	0.194
ASIAN	3.593	0.017	2.425	0.015
BLACK	-3.747	-0.031	-4.159	0.000
LATINO	-5.206	-0.043	-5.747	0.000
SSTR(1)	0.388	0.404	39.274	0.000
SSTR(3)	0.451	0.478	45.944	0.000
OTHRRACE	-0.877	-0.002	-0.273	0.785

Table 2.21 Cohort 3; Total Reading Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSTR(3) N: 6242 MULTIPLE R: 0.826

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	107.368	0.000	17.919	0.000
AMERIND	-9.332	-0.020	-2.839	0.005
ASIAN	2.245	0.010	1.359	0.174
BLACK	-10.769	-0.085	-10.811	0.000
LATINO	-3.526	-0.027	-3.486	0.000
SSTR(2)	0.560	0.529	45.944	0.000
SSTR(1)	0.313	0.308	26.939	0.000
OTHRRACE	-1.161	-0.002	-0.324	0.746

Table 2.22 Cohort 7; Total Math Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSTM(1) N: 3181 MULTIPLE R: 0.798

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	180.116	0.000	21.306	0.000
AMERIND	6.854	0.020	1.833	0.067
ASIAN	4.436	0.021	1.932	0.053
BLACK	-4.578	-0.038	-3.385	0.001
LATINO	-6.579	-0.049	-4.408	0.000
SSTM(2)	0.537	0.581	39.711	0.000
SSTM(3)	0.214	0.260	17.793	0.000
OTHRRACE	-6.306	-0.013	-1.214	0.225

Table 2.23 Cohort 7; Total Math Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSTM(2) N: 3181 MULTIPLE R: 0.802

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	106.543	0.000	11.210	0.000
AMERIND	-9.249	-0.025	-2.308	0.021
ASIAN	5.687	0.025	2.311	0.021
BLACK	-3.049	-0.024	-2.100	0.036
LATINO	-2.049	-0.014	-1.277	0.202
SSTM(1)	0.618	0.572	39.711	0.000
SSTM(3)	0.252	0.283	19.761	0.000
OTHRRACE	14.922	0.029	2.681	0.007

Table 2.24 Cohort 7; Total Math Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSTM(3) N: 3181 MULTIPLE R: 0.716

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	121.724	0.000	9.722	0.000
AMERIND	-13.542	-0.032	-2.578	0.010
ASIAN	-7.841	-0.030	-2.430	0.015
BLACK	-11.110	-0.076	-5.865	0.000
LATINO	-4.890	-0.030	-2.325	0.020
SSTM(2)	0.434	0.387	19.761	0.000
SSTM(1)	0.423	0.349	17.793	0.000
OTHRRACE	-13.599	-0.023	-1.862	0.063

Table 2.25 Cohort 7; Total Reading Scale Score; Imputation Model for Year 1 Score

DEP VAR: SSTR(1) N: 3321 MULTIPLE R: 0.789

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	198.838	0.000	23.829	0.000
AMERIND	0.911	0.003	0.268	0.789
ASIAN	-0.022	-0.000	-0.010	0.992
BLACK	-7.215	-0.064	-5.642	0.000
LATINO	-9.988	-0.078	-7.039	0.000
SSTR(2)	0.464	0.511	35.535	0.000
SSTR(3)	0.265	0.313	21.637	0.000
OTHRRACE	-3.145	-0.008	-0.701	0.484

Table 2.26 Cohort 7; Total Reading Scale Score; Imputation Model for Year 2 Score

DEP VAR: SSTR(2) N: 3321 MULTIPLE R: 0.775

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	105.183	0.000	10.446	0.000
AMERIND	-3.520	-0.010	-0.914	0.361
ASIAN	0.895	0.004	0.377	0.706
BLACK	-2.643	-0.021	-1.816	0.069
LATINO	-1.741	-0.012	-1.075	0.282
SSTR(1)	0.595	0.540	35.535	0.000
SSTR(3)	0.270	0.289	19.194	0.000
OTHRRACE	1.275	0.003	0.251	0.802

Table 2.27 Cohort 7; Total Reading Scale Score; Imputation Model for Year 3 Score

DEP VAR: SSTR(3) N: 3321 MULTIPLE R: 0.723

VARIABLE	COEFFICIENT	STD COEF	T	P(2 TAIL)
CONSTANT	130.971	0.000	11.134	0.000
AMERIND	-11.535	-0.031	-2.560	0.010
ASIAN	-6.586	-0.029	-2.374	0.018
BLACK	-10.757	-0.081	-6.348	0.000
LATINO	-3.560	-0.024	-1.878	0.060
SSTR(2)	0.370	0.346	19.194	0.000
SSTR(1)	0.467	0.396	21.637	0.000
OTHRRACE	-10.461	-0.021	-1.757	0.079

Appendix C: Factor Loadings for Instructional Composite Variables

Tables 3.2 through 3.13 below display the items representing each composite instructional factor along with the loadings for each year. Independent results are provided by subject (math and R/E/LA) for the Classroom Teacher and Chapter 1 Teacher Questionnaires. Due to the small numbers of Chapter 1 math and R/E/LA teachers, some empirical results of the factor analyses were less consistent than those based on the larger pool of classroom teachers. Obtaining empirical support for the factor structures from the Chapter 1 teacher loadings may have led to misleading conclusions. Therefore, confirmation of the composite factors was sought from the classroom teacher analyses. The three factors for Chapter 1 teachers were then derived from items that were similar to those used in the classroom teacher composites. Loadings from individual years that are noted as "NA" indicate that the item was not available for that year. Loadings noted as "DUP" indicate that the item was not used in the given year because a very similar, or duplicate, item was included in the composite. Finally, some variables were not used in the factors because they were constants. The loadings for these items that were not used are noted as "NU." Although *Prospects* item numbers changed from year to year, to maintain consistency most questionnaire item numbers noted in the tables are referenced by their original 1992 numbers. The exceptions are new items introduced in the 1993 questionnaires, which are referred to by their 1993 item numbers.

Table 3.2 Instructional Attributes; Classroom Teacher, R/E/LA; Cohort 1

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.34	NA
	E-3B Student's intellectual ability. (Reversed)	.32	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.31	NA
	E-3E Teacher's use of effective methods of teaching.	.30	NA
	E-3F Teacher's enthusiasm or perseverance.	.26	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.70	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.64	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.70	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.71	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.50	NA
	E-4F I am certain I am making a difference in the lives of my students.	.54	NA

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Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year 1992	1993
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	DUP	.76
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.60	.70
	L-20A Frequency with which teacher uses textbook(s).	.50	NA
	L-20C Frequency with which teacher uses basal reader.	.52	NA
	L-20I Frequency with which teacher uses controlled vocabulary materials.	.31	NA
	L-22I Emphasis in class given to developing listening skills.	.43	.42
	L-22L Emphasis in class given to learning manuscript writing.	.32	NA
	L-22M Emphasis in class given to learning cursive writing.	.14	NA
	L-22Q Emphasis in class given to learning to follow directions.	.47	NA
	L-22R Emphasis in class given to learning to comprehend facts and details.	.62	NA
	L-22T Emphasis in class given to learning to remember the sequence of significant events.	.56	.38
	L-23J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.59	NA
	L-23Q How often does teacher test students' mastery of the materials and/or skills?	.51	NA
	L-24A How often do students seek clarification about directions?	.32	NA
	L-24B How often is reteaching provided?	.40	NA
	L-24C How often are students asked questions to check for understanding?	.39	NA
	L-24D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.28	NA
	L-24F How often is feedback on student performance specific, referring to students' skills and competencies?	.47	NA
	F-8D Is vocabulary/word meanings part of the teacher's instructional program?	NA	.51
	F-8P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.17
Student-centered, Advanced-skills Approach	C-1B Frequency with which teacher uses trade books.	DUP	.43
	C-1C Frequency with which teacher uses teacher-developed materials.	.23	.25
	C-1G Frequency with which teacher uses life skills materials.	DUP	.31
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	.16	.11
	L-20D Frequency with which teacher uses children's newspapers and/or magazines.	.35	NA
	L-20E Frequency with which teacher uses adult newspapers and magazines.	.39	NA
	L-20F Frequency with which teacher uses language experience stories.	.46	NA
	L-21D,F Main approach to teaching reading is whole language or language experience approach.	.27	NA
	L-22A Emphasis in class given to fiction.	.43	NA

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	L-22B Emphasis in class given to poetry.	.49	NA
	L-22C Emphasis in class given to mythology/folk tales.	.49	NA
	L-22D Emphasis in class given to biography.	.53	NA
	L-22E Emphasis in class given to drama.	.59	NA
	L-22F Emphasis in class given to expository text.	.47	NA
	L-22G Emphasis in class given to other non-fiction.	.53	NA
	L-22U Emphasis in class given to learning to differentiate fact from opinion.	.39	NA
	L-22V Emphasis in class given to learning to draw inferences.	.41	NA
	L-22W Emphasis in class given to learning to read charts and graphs.	.57	NA
	L-22Y Emphasis in class given to learning to use and interpret life skills materials.	.43	NA
	L-22Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.46	NA
	L-22AA Emphasis in class given to developing oral communication skills.	.49	.33
	L-22BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.52	NA
	L-22CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.62	NA
	L-22DD Emphasis in class given to developing students' confidence in their ability to read.	.48	NA
	L-22EE Emphasis in class given to developing students' confidence in their ability to write.	.61	NA
	L-22FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.60	NA
	L-23B How often does the teacher have students do creative writing assignments?	.64	NA
	L-23C How often does the teacher have students write factual reports?	.54	NA
	L-23D How often does the teacher have students write about something they read?	.62	NA
	L-23H How often does the teacher have students work with one another in pairs or small groups?	.52	NA
	L-23I How often does the teacher have students participate in peer tutoring?	.41	NA
	L-23N How often does the teacher have students give oral presentations or reports?	.55	NA
	L-23O How often does the teacher have students publish their own writing?	.52	NA
	L-23P How often does the teacher have students complete creative projects related to books they read?	.55	NA
	L-24E How often are opportunities provided for skill and knowledge application to real life situations?	.39	NA
	F-8H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.47

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	F-8I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.66
	F-8J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.71
	F-8K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.61
	F-8O Is keeping daily journals part of the teacher's instructional program?	NA	.33
	F-8Q Is learning the writing process part of the teacher's instructional program?	NA	.56

Table 3.3 Instructional Attributes; Classroom Teacher, R/E/LA; Cohort 3

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.41	NA
	E-3B Student's intellectual ability. (Reversed)	.36	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.39	NA
	E-3E Teacher's use of effective methods of teaching.	.30	NA
	E-3F Teacher's enthusiasm or perseverance.	.31	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.69	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.64	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.69	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.76	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.58	NA
	E-4F I am certain I am making a difference in the lives of my students.	.61	NA
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	DUP	.77
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.45	.79
	L-20A Frequency with which teacher uses textbook(s).	.47	NA
	L-20C Frequency with which teacher uses basal reader.	.39	NA
	L-20I Frequency with which teacher uses controlled vocabulary materials.	.36	NA
	L-22I Emphasis in class given to developing listening skills.	.52	.19
	L-22L Emphasis in class given to learning manuscript writing.	.29	NA
	L-22M Emphasis in class given to learning cursive writing.	.39	NA
	L-22Q Emphasis in class given to learning to follow directions.	.52	NA
	L-22R Emphasis in class given to learning to comprehend facts and details.	.52	NA
	L-22T Emphasis in class given to learning to remember the sequence of significant events.	.50	.37
	L-23J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.50	NA
	L-23Q How often does teacher test students' mastery of the materials and/or skills?	.45	NA
	L-24A How often do students seek clarification about directions?	.37	NA
	L-24B How often is reteaching provided?	.47	NA
	L-24C How often are students asked questions to check for understanding?	.38	NA

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Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher-led, Basic-skills Approach	L-24D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.42	NA
	L-24F How often is feedback on student performance specific, referring to students' skills and competencies?	.51	NA
	F-8D Is vocabulary/word meanings part of the teacher's instructional program?	NA	.40
	F-8P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.07
Student-centered, Advanced-skills Approach	C-1B Frequency with which teacher uses trade books.	DUP	.49
	C-1C Frequency with which teacher uses teacher-developed materials.	.21	.33
	C-1G Frequency with which teacher uses life skills materials.	DUP	.47
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	.27	.31
	L-20D Frequency with which teacher uses children's newspapers and/or magazines.	.44	NA
	L-20E Frequency with which teacher uses adult newspapers and magazines.	.52	NA
	L-20F Frequency with which teacher uses language experience stories.	.46	NA
	L-21D,F Main approach to teaching reading is whole language or language experience approach.	.24	NA
	L-22A Emphasis in class given to fiction.	.30	NA
	L-22B Emphasis in class given to poetry.	.57	NA
	L-22C Emphasis in class given to mythology/folk tales.	.50	NA
	L-22D Emphasis in class given to biography.	.55	NA
	L-22E Emphasis in class given to drama.	.54	NA
	L-22F Emphasis in class given to expository text.	.49	NA
	L-22G Emphasis in class given to other non-fiction.	.46	NA
	L-22U Emphasis in class given to learning to differentiate fact from opinion.	.41	NA
	L-22V Emphasis in class given to learning to draw inferences.	.46	NA
	L-22W Emphasis in class given to learning to read charts and graphs.	.47	NA
	L-22Y Emphasis in class given to learning to use and interpret life skills materials.	.60	NA
	L-22Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.59	NA
	L-22AA Emphasis in class given to developing oral communication skills.	.56	.42
	L-22BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.48	NA
	L-22CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.66	NA
	L-22DD Emphasis in class given to developing students' confidence in their ability to read.	.45	NA

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	L-22EE Emphasis in class given to developing students' confidence in their ability to write.	.62	NA
	L-22FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.46	NA
	L-23B How often does the teacher have students do creative writing assignments?	.59	NA
	L-23C How often does the teacher have students write factual reports?	.58	NA
	L-23D How often does the teacher have students write about something they read?	.51	NA
	L-23H How often does the teacher have students work with one another in pairs or small groups?	.46	NA
	L-23I How often does the teacher have students participate in peer tutoring?	.48	NA
	L-23N How often does the teacher have students give oral presentations or reports?	.57	NA
	L-23O How often does the teacher have students publish their own writing?	.45	NA
	L-23P How often does the teacher have students complete creative projects related to books they read?	.57	NA
	L-24E How often are opportunities provided for skill and knowledge application to real life situations?	.39	NA
	F-8H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.46
	F-8I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.62
	F-8J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.63
	F-8K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.64
	F-8O Is keeping daily journals part of the teacher's instructional program?	NA	.43
	F-8Q Is learning the writing process part of the teacher's instructional program?	NA	.55

Table 3.4 Instructional Attributes; Classroom Teacher, R/E/LA; Cohort 7

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.43	NA
	E-3B Student's intellectual ability. (Reversed)	.28	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.25	NA
	E-3E Teacher's use of effective methods of teaching.	.25	NA
	E-3F Teacher's enthusiasm or perseverance.	.32	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.70	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.69	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.70	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.78	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.55	NA
	E-4F I am certain I am making a difference in the lives of my students.	.54	NA
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	--	.71
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.56	.63
	L-20A Frequency with which teacher uses textbook(s).	.26	NA
	L-20C Frequency with which teacher uses basal reader.	.45	NA
	L-20I Frequency with which teacher uses controlled vocabulary materials.	.38	NA
	L-22I Emphasis in class given to developing listening skills.	.49	.01
	L-22L Emphasis in class given to learning manuscript writing.	.26	NA
	L-22M Emphasis in class given to learning cursive writing.	.39	NA
	L-22Q Emphasis in class given to learning to follow directions.	.58	NA
	L-22R Emphasis in class given to learning to comprehend facts and details.	.55	NA
	L-22T Emphasis in class given to learning to remember the sequence of significant events.	.60	.40
	L-23J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.61	NA
	L-23Q How often does teacher test students' mastery of the materials and/or skills?	.45	NA
	L-24A How often do students seek clarification about directions?	.35	NA
	L-24B How often is reteaching provided?	.44	NA
	L-24C How often are students asked questions to check for understanding?	.38	NA

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Teacher-led, Basic-skills Approach	L-24D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.23	NA
	L-24F How often is feedback on student performance specific, referring to students' skills and competencies?	.35	NA
	F-8B Is vocabulary/word meanings part of the teacher's instructional program?	NA	.45
	F-8P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.30
Student-centered, Advanced-skills Approach	C-1B Frequency with which teacher uses trade books.	DUP	.50
	C-1C Frequency with which teacher uses teacher-developed materials.	.08	.06
	C-1G Frequency with which teacher uses life skills materials.	DUP	-.04
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	.24	.11
	L-20D Frequency with which teacher uses children's newspapers and/or magazines.	.29	NA
	L-20E Frequency with which teacher uses adult newspapers and magazines.	.43	NA
	L-20F Frequency with which teacher uses language experience stories.	.47	NA
	L-21D,F Main approach to teaching reading is whole language or language experience approach.	.28	NA
	L-22A Emphasis in class given to fiction.	.39	NA
	L-22B Emphasis in class given to poetry.	.50	NA
	L-22C Emphasis in class given to mythology/folk tales.	.44	NA
	L-22D Emphasis in class given to biography.	.60	NA
	L-22E Emphasis in class given to drama.	.57	NA
	L-22F Emphasis in class given to expository text.	.47	NA
	L-22G Emphasis in class given to other non-fiction.	.50	NA
	L-22U Emphasis in class given to learning to differentiate fact from opinion.	.55	NA
	L-22V Emphasis in class given to learning to draw inferences.	.54	NA
	L-22W Emphasis in class given to learning to read charts and graphs.	.46	NA
	L-22Y Emphasis in class given to learning to use and interpret life skills materials.	.36	NA
	L-22Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.52	NA
	L-22AA Emphasis in class given to developing oral communication skills.	.57	.30
	L-22BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.64	NA
	L-22CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.63	NA
	L-22DD Emphasis in class given to developing students' confidence in their ability to read.	.58	NA

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Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	L-22EE Emphasis in class given to developing students' confidence in their ability to write.	.60	NA
	L-22FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.62	NA
	L-23B How often does the teacher have students do creative writing assignments?	.49	NA
	L-23C How often does the teacher have students write factual reports?	.48	NA
	L-23D How often does the teacher have students write about something they read?	.53	NA
	L-23H How often does the teacher have students work with one another in pairs or small groups?	.31	NA
	L-23I How often does the teacher have students participate in peer tutoring?	.33	NA
	L-23N How often does the teacher have students give oral presentations or reports?	.56	NA
	L-23O How often does the teacher have students publish their own writing?	.38	NA
	L-23P How often does the teacher have students complete creative projects related to books they read?	.50	NA
	L-24E How often are opportunities provided for skill and knowledge application to real life situations?	.28	NA
	F-8H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.76
	F-8I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.74
	F-8J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.77
	F-8K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.44
	F-8O Is keeping daily journals part of the teacher's instructional program?	NA	.25
	F-8Q Is learning the writing process part of the teacher's instructional program?	NA	.48

Table 3.5 Instructional Attributes; Classroom Teacher, math; Cohort 1

Factor	Classroom Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.33	NA
	E-3B Student's intellectual ability. (Reversed)	.31	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.30	NA
	E-3E Teacher's use of effective methods of teaching.	.30	NA
	E-3F Teacher's enthusiasm or perseverance.	.26	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.70	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.64	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.71	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.71	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.50	NA
	E-4F I am certain I am making a difference in the lives of my students.	.54	NA
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	DUP	.88
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.62	.88
	I-19A Frequency with which teacher uses textbook(s).	.61	NA
	I-19D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.61	NA
	I-19G Frequency with which teacher uses chalkboard.	.47	NA
	I-20A Emphasis in class given to whole numbers/whole number operations.	.23	-.02
	I-20C Emphasis in class given to common fractions, decimal fractions, and/or percent.	.18	-.03
	I-20K Emphasis in class given to learning mathematics facts and concepts.	.44	NA
	I-21E How often does teacher have students do mathematics problems from their textbooks?	.59	NA
	I-21F How often does teacher have students complete math workbooks or skill-sheet assignments?	.68	NA
	I-21G How often does teacher have students complete problems on the chalkboard?	.58	NA
	I-21K How often does teacher test students' mastery of the materials and/or skills?	.44	NA
	I-22A How often do students seek clarification about directions?	.23	NA
	I-22B How often is reteaching provided?	.19	NA
	I-22C How often are students asked questions to check for understanding?	.20	NA

Factor	Classroom Teacher (math) Questionnaire Item	Year	
		1992	1993
Teacher-led, Basic-skills Approach	I-22D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.18	NA
	I-22F How often is feedback on student performance specific, referring to students' skills and competencies?	.38	NA
Student-centered, Advanced-skills Approach	C-1C Frequency with which teacher uses teacher-developed materials.	DUP	.39
	C-1F Frequency with which teacher uses manipulative materials.	DUP	.51
	C-1G Frequency with which teacher uses life skills materials.	.37	.48
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.34
	C-1M Frequency with which teacher uses calculators.	NA	.41
	I-19E Frequency with which teacher uses manipulatives.	.35	NA
	I-19F Frequency with which teacher uses teacher-made materials.	.33	NA
	I-19I Frequency with which teacher uses audiovisuals/videos.	.40	NA
	I-19J Frequency with which teacher uses calculators.	.36	NA
	I-20B Emphasis in class given to problem solving.	.57	.16
	I-20D Emphasis in class given to ratio and proportion.	.40	.47
	I-20E Emphasis in class given to measurement and/or tables and graphs.	.59	.33
	I-20F Emphasis in class given to geometry.	.43	.44
	I-20G Emphasis in class given to algebra.	.27	.54
	I-20I Emphasis in class given to probability and statistics.	.34	.59
	I-20L Emphasis in class given to learning skills and procedures needed to solve word problems.	.58	NA
	I-20M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.66	NA
	I-20N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.74	NA
	I-20O Emphasis in class given to learning practical applications of math skills to everyday life.	.70	NA
	I-20P Emphasis in class given to developing an appreciation for the importance of mathematics.	.67	NA
	I-20Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.54	NA
	I-20R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.59	NA
	I-20S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.68	NA
	I-21B How often does the teacher have students work with one another in pairs or small groups?	.46	NA
	I-21C How often does the teacher have students participate in peer tutoring?	.41	NA

Factor	Classroom Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	I-21H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.41	NA
	I-21I How often does the teacher have students use calculators?	.37	NA
	I-22E How often are opportunities provided for skill and knowledge application to real life situations?	.44	NA

Table 3.6 Instructional Attributes; Classroom Teacher, math; Cohort 3

Factor	Classroom Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.41	NA
	E-3B Student's intellectual ability. (Reversed)	.38	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.39	NA
	E-3E Teacher's use of effective methods of teaching.	.29	NA
	E-3F Teacher's enthusiasm or perseverance.	.35	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.70	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.65	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.70	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.77	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.57	NA
	E-4F I am certain I am making a difference in the lives of my students.	.63	NA
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	DUP	.86
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.59	.84
	I-19A Frequency with which teacher uses textbook(s).	.62	NA
	I-19D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.58	NA
	I-19G Frequency with which teacher uses chalkboard.	.35	NA
	I-20A Emphasis in class given to whole numbers/whole number operations.	.26	.15
	I-20C Emphasis in class given to common fractions, decimal fractions, and/or percent.	.24	.08
	I-20K Emphasis in class given to learning mathematics facts and concepts.	.41	NA
	I-21E How often does teacher have students do mathematics problems from their textbooks?	.64	NA
	I-21F How often does teacher have students complete math workbooks or skill-sheet assignments?	.64	NA
	I-21G How often does teacher have students complete problems on the chalkboard?	.42	NA
	I-21K How often does teacher test students' mastery of the materials and/or skills?	.31	NA
	I-22A How often do students seek clarification about directions?	.04	NA
	I-22B How often is reteaching provided?	.07	NA
	I-22C How often are students asked questions to check for understanding?	.17	NA

Factor	Classroom Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher-led, Basic-skills Approach	I-22D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.19	NA
	I-22F How often is feedback on student performance specific, referring to students' skills and competencies?	.27	NA
Student-centered, Advanced-skills Approach	C-1C Frequency with which teacher uses teacher-developed materials.	DUP	.44
	C-1F Frequency with which teacher uses manipulative materials.	DUP	.57
	C-1G Frequency with which teacher uses life skills materials.	.36	.58
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.41
	C-1M Frequency with which teacher uses calculators.	NA	.49
	I-19E Frequency with which teacher uses manipulatives.	.47	NA
	I-19F Frequency with which teacher uses teacher-made materials.	.38	NA
	I-19I Frequency with which teacher uses audiovisuals/videos.	.31	NA
	I-19J Frequency with which teacher uses calculators.	.34	NA
	I-20B Emphasis in class given to problem solving.	.56	.05
	I-20D Emphasis in class given to ratio and proportion.	.44	.47
	I-20E Emphasis in class given to measurement and/or tables and graphs.	.55	.30
	I-20F Emphasis in class given to geometry.	.47	.45
	I-20G Emphasis in class given to algebra.	.38	.48
	I-20I Emphasis in class given to probability and statistics.	.43	.53
	I-20L Emphasis in class given to learning skills and procedures needed to solve word problems.	.55	NA
	I-20M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.67	NA
	I-20N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.69	NA
	I-20O Emphasis in class given to learning practical applications of math skills to everyday life.	.66	NA
	I-20P Emphasis in class given to developing an appreciation for the importance of mathematics.	.60	NA
	I-20Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.54	NA
	I-20R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.59	NA
	I-20S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.65	NA
	I-21B How often does the teacher have students work with one another in pairs or small groups?	.37	NA
	I-21C How often does the teacher have students participate in peer tutoring?	.37	NA

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Factor	Classroom Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	I-21H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.43	NA
	I-21I How often does the teacher have students use calculators?	.37	NA
	I-22E How often are opportunities provided for skill and knowledge application to real life situations?	.47	NA

Table 3.7 Instructional Attributes; Classroom Teacher, math; Cohort 7

Factor	Classroom Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.36	NA
	E-3B Student's intellectual ability. (Reversed)	.34	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.35	NA
	E-3E Teacher's use of effective methods of teaching.	.27	NA
	E-3F Teacher's enthusiasm or perseverance.	.34	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.72	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.64	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.74	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.72	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.56	NA
	E-4F I am certain I am making a difference in the lives of my students.	.59	NA
Teacher-led, Basic-skills Approach	C-1A Frequency with which teacher uses textbooks.	DUP	-.15
	C-1E Frequency with which teacher uses workbooks and practice sheets.	.45	.31
	I-19A Frequency with which teacher uses textbook(s).	.02	NA
	I-19D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.43	NA
	I-19G Frequency with which teacher uses chalkboard.	.25	NA
	I-20A Emphasis in class given to whole numbers/whole number operations.	.47	.92
	I-20C Emphasis in class given to common fractions, decimal fractions, and/or percent.	.42	.90
	I-20K Emphasis in class given to learning mathematics facts and concepts.	.38	NA
	I-21E How often does teacher have students do mathematics problems from their textbooks?	.02	NA
	I-21F How often does teacher have students complete math workbooks or skill-sheet assignments?	.58	NA
	I-21G How often does teacher have students complete problems on the chalkboard?	.38	NA
	I-21K How often does teacher test students' mastery of the materials and/or skills?	.16	NA
	I-22A How often do students seek clarification about directions?	.50	NA
	I-22B How often is reteaching provided?	.58	NA
	I-22C How often are students asked questions to check for understanding?	.49	NA
	I-22D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.47	NA

Factor	Classroom Teacher (math) Questionnaire Item	Year	
		1992	1993
Teacher-led, Basic-skills Approach	I-22F How often is feedback on student performance specific, referring to students' skills and competencies?	.49	NA
	C-1C Frequency with which teacher uses teacher-developed materials.	DUP	.19
	C-1F Frequency with which teacher uses manipulative materials.	DUP	.47
	C-1G Frequency with which teacher uses life skills materials.	.33	.29
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.26
	C-1M Frequency with which teacher uses calculators.	NA	.22
	I-19E Frequency with which teacher uses manipulatives.	.48	NA
	I-19F Frequency with which teacher uses teacher-made materials.	.31	NA
	I-19I Frequency with which teacher uses audiovisuals/videos.	.33	NA
	I-19J Frequency with which teacher uses calculators.	.33	NA
	I-20B Emphasis in class given to problem solving.	.57	.61
	I-20D Emphasis in class given to ratio and proportion.	.38	.67
	I-20E Emphasis in class given to measurement and/or tables and graphs.	.45	.69
	I-20F Emphasis in class given to geometry.	.38	.52
	I-20G Emphasis in class given to algebra.	.19	.19
	I-20I Emphasis in class given to probability and statistics.	.37	.49
	I-20L Emphasis in class given to learning skills and procedures needed to solve word problems.	.61	NA
	I-20M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.58	NA
	I-20N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.66	NA
Student-centered, Advanced-skills Approach	I-20O Emphasis in class given to learning practical applications of math skills to everyday life.	.62	NA
	I-20P Emphasis in class given to developing an appreciation for the importance of mathematics.	.66	NA
	I-20Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.62	NA
	I-20R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.63	NA
	I-20S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.70	NA
	I-21B How often does the teacher have students work with one another in pairs or small groups?	.37	NA
	I-21C How often does the teacher have students participate in peer tutoring?	.33	NA
	I-21H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.48	NA

Factor	Classroom Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	I-21I How often does the teacher have students use calculators?	.36	NA
	I-22E How often are opportunities provided for skill and knowledge application to real life situations?	.47	NA

Table 3.8 Instructional Attributes; Chapter 1 Teacher, R/E/LA; Cohort 1

Factor	Chapter 1 Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.26	NA
	E-3B Student's intellectual ability. (Reversed)	.24	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.33	NA
	E-3E Teacher's use of effective methods of teaching.	.16	NA
	E-3F Teacher's enthusiasm or perseverance.	.27	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.66	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.75	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.77	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.83	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.74	NA
	E-4F I am certain I am making a difference in the lives of my students.	.67	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	.71
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.79
	J-23A Frequency with which teacher uses textbook(s).	.16	NA
	J-23C Frequency with which teacher uses basal reader.	.11	NA
	J-23I Frequency with which teacher uses controlled vocabulary materials.	.07	NA
	J-26I Emphasis in class given to developing listening skills.	-.09	.33
	J-26L Emphasis in class given to learning manuscript writing.	-.30	NA
	J-26M Emphasis in class given to learning cursive writing.	-.25	NA
	J-26Q Emphasis in class given to learning to follow directions.	-.35	NA
	J-26R Emphasis in class given to learning to comprehend facts and details.	-.25	NA
	J-26T Emphasis in class given to learning to remember the sequence of significant events.	-.37	.20
	J-27J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.34	.83
	J-27Q How often does teacher test students' mastery of the materials and/or skills?	.34	.38
	J-28A How often do students seek clarification about directions?	.24	NA
	J-28B How often is reteaching provided?	.56	NA
	J-28C How often are students asked questions to check for understanding?	.79	NA

Factor	Chapter 1-Teacher (reading/English/language arts) Questionnaire Item	Year 1992	1993
Teacher-led, Basic-skills Approach	J-28D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.59	NA
	J-28F How often is feedback on student performance specific, referring to students' skills and competencies?	.63	NA
	G-20D Is vocabulary/word meanings part of the teacher's instructional program?	NA	-.09
	G-20P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.23
Student-centered, Advanced-skills Approach	B-1B Frequency with which teacher uses trade books.	DUP	.45
	B-1C Frequency with which teacher uses teacher-developed materials.	NU	.38
	B-1G Frequency with which teacher uses life skills materials.	DUP	.31
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	NU	.34
	J-23D Frequency with which teacher uses children's newspapers and/or magazines.	-.47	NA
	J-23E Frequency with which teacher uses adult newspapers and magazines.	-.38	NA
	J-23F Frequency with which teacher uses language experience stories.	-.38	NA
	J-25 Main approach to teaching reading is whole language or language experience approach.	-.26	NA
	J-26A Emphasis in class given to fiction.	.61	NA
	J-26B Emphasis in class given to poetry.	.72	NA
	J-26C Emphasis in class given to mythology/folk tales.	.58	NA
	J-26D Emphasis in class given to biography.	.74	NA
	J-26E Emphasis in class given to drama.	.72	NA
	J-26F Emphasis in class given to expository text.	.69	NA
	J-26G Emphasis in class given to other non-fiction.	.73	NA
	J-26U Emphasis in class given to learning to differentiate fact from opinion.	.51	NA
	J-26V Emphasis in class given to learning to draw inferences.	.47	NA
	J-26W Emphasis in class given to learning to read charts and graphs.	.41	NA
	J-26Y Emphasis in class given to learning to use and interpret life skills materials.	.46	NA
	J-26Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.59	NA
	J-26AA Emphasis in class given to developing oral communication skills.	.35	.48
	J-26BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.41	NA
	J-26CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.30	NA
	J-26DD Emphasis in class given to developing students' confidence in their ability to read.	.38	NA

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Factor	Chapter 1 Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	J-26EE Emphasis in class given to developing students' confidence in their ability to write.	.26	NA
	J-26FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.26	NA
	J-27B How often does the teacher have students do creative writing assignments?	-.51	.68
	J-27C How often does the teacher have students write factual reports?	-.31	.70
	J-27D How often does the teacher have students write about something they read?	-.36	.65
	J-27H How often does the teacher have students work with one another in pairs or small groups?	-.28	.55
	J-27I How often does the teacher have students participate in peer tutoring?	-.19	.53
	J-27N How often does the teacher have students give oral presentations or reports?	-.41	.66
	J-27O How often does the teacher have students publish their own writing?	-.28	.70
	J-27P How often does the teacher have students complete creative projects related to books they read?	-.48	.68
	J-28E How often are opportunities provided for skill and knowledge application to real life situations?	-.20	NA
	G-20H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.30
	G-20I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.44
	G-20J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.50
	G-20K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.63
	G-20O Is keeping daily journals part of the teacher's instructional program?	NA	.62
	G-20Q Is learning the writing process part of the teacher's instructional program?	NA	.60

Table 3.9 Instructional Attributes; Chapter 1 Teacher, R/E/LA; Cohort 3

Factor	Chapter 1 Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.18	NA
	E-3B Student's intellectual ability. (Reversed)	.22	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.09	NA
	E-3E Teacher's use of effective methods of teaching.	.12	NA
	E-3F Teacher's enthusiasm or perseverance.	.07	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.65	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.80	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.81	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.85	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.72	NA
	E-4F I am certain I am making a difference in the lives of my students.	.70	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	.46
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.59
	J-23A Frequency with which teacher uses textbook(s).	.22	NA
	J-23C Frequency with which teacher uses basal reader.	.27	NA
	J-23I Frequency with which teacher uses controlled vocabulary materials.	-.04	NA
	J-26I Emphasis in class given to developing listening skills.	.53	.24
	J-26L Emphasis in class given to learning manuscript writing.	.09	NA
	J-26M Emphasis in class given to learning cursive writing.	.05	NA
	J-26Q Emphasis in class given to learning to follow directions.	.43	NA
	J-26R Emphasis in class given to learning to comprehend facts and details.	.66	NA
	J-26T Emphasis in class given to learning to remember the sequence of significant events.	.67	.52
	J-27J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.19	.76
	J-27Q How often does teacher test students' mastery of the materials and/or skills?	.16	.40
	J-28A How often do students seek clarification about directions?	.46	NA
	J-28B How often is reteaching provided?	.61	NA
	J-28C How often are students asked questions to check for understanding?	.59	NA

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Factor	Chapter 1-Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher-led, Basic-skills Approach	J-28D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.39	NA
	J-28F How often is feedback on student performance specific, referring to students' skills and competencies?	.54	NA
	G-20D Is vocabulary/word meanings part of the teacher's instructional program?	NA	.57
	G-20P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.24
Student-centered, Advanced-skills Approach	B-1B Frequency with which teacher uses trade books.	DUP	.57
	B-1C Frequency with which teacher uses teacher-developed materials.	NU	.52
	B-1G Frequency with which teacher uses life skills materials.	DUP	.57
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	NU	.42
	J-23D Frequency with which teacher uses children's newspapers and/or magazines.	.56	NA
	J-23E Frequency with which teacher uses adult newspapers and magazines.	.57	NA
	J-23F Frequency with which teacher uses language experience stories.	.61	NA
	J-25 Main approach to teaching reading is whole language or language experience approach.	.33	NA
	J-26A Emphasis in class given to fiction.	-.18	NA
	J-26B Emphasis in class given to poetry.	-.14	NA
	J-26C Emphasis in class given to mythology/folk tales.	-.18	NA
	J-26D Emphasis in class given to biography.	-.13	NA
	J-26E Emphasis in class given to drama.	-.24	NA
	J-26F Emphasis in class given to expository text.	-.17	NA
	J-26G Emphasis in class given to other non-fiction.	-.16	NA
	J-26U Emphasis in class given to learning to differentiate fact from opinion.	.05	NA
	J-26V Emphasis in class given to learning to draw inferences.	.16	NA
	J-26W Emphasis in class given to learning to read charts and graphs.	.10	NA
	J-26Y Emphasis in class given to learning to use and interpret life skills materials.	-.01	NA
	J-26Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	-.25	NA
	J-26AA Emphasis in class given to developing oral communication skills.	.07	.47
	J-26BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.39	NA
	J-26CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.43	NA
	J-26DD Emphasis in class given to developing students' confidence in their ability to read.	.23	NA

Factor	Chapter 1.Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	J-26EE Emphasis in class given to developing students' confidence in their ability to write.	.37	NA
	J-26FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.26	NA
	J-27B How often does the teacher have students do creative writing assignments?	.74	.79
	J-27C How often does the teacher have students write factual reports?	.69	.70
	J-27D How often does the teacher have students write about something they read?	.70	.76
	J-27H How often does the teacher have students work with one another in pairs or small groups?	.58	.62
	J-27I How often does the teacher have students participate in peer tutoring?	.45	.59
	J-27N How often does the teacher have students give oral presentations or reports?	.70	.76
	J-27O How often does the teacher have students publish their own writing?	.63	.66
	J-27P How often does the teacher have students complete creative projects related to books they read?	.77	.71
	J-28E How often are opportunities provided for skill and knowledge application to real life situations?	.39	NA
	G-20H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.36
	G-20I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.33
	G-20J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.43
	G-20K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.52
	G-20O Is keeping daily journals part of the teacher's instructional program?	NA	.64
	G-20Q Is learning the writing process part of the teacher's instructional program?	NA	.66

Table 3.10 Instructional Attributes; Chapter 1 Teacher, R/E/LA; Cohort 7

Factor	Chapter 1 Teacher (reading/English/language arts) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.47	NA
	E-3B Student's intellectual ability. (Reversed)	.60	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.43	NA
	E-3E Teacher's use of effective methods of teaching.	.19	NA
	E-3F Teacher's enthusiasm or perseverance.	.47	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.66	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.56	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.75	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.78	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.53	NA
	E-4F I am certain I am making a difference in the lives of my students.	.34	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	.68
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.80
	J-23A Frequency with which teacher uses textbook(s).	-.18	NA
	J-23C Frequency with which teacher uses basal reader.	.11	NA
	J-23I Frequency with which teacher uses controlled vocabulary materials.	.38	NA
	J-26I Emphasis in class given to developing listening skills.	.25	.34
	J-26L Emphasis in class given to learning manuscript writing.	.48	NA
	J-26M Emphasis in class given to learning cursive writing.	.49	NA
	J-26Q Emphasis in class given to learning to follow directions.	.46	NA
	J-26R Emphasis in class given to learning to comprehend facts and details.	.58	NA
	J-26T Emphasis in class given to learning to remember the sequence of significant events.	.71	.01
	J-27J How often does teacher have students complete R/E/LA workbooks or skill-sheet assignments?	.41	.35
	J-27Q How often does teacher test students' mastery of the materials and/or skills?	.11	.77
	J-28A How often do students seek clarification about directions?	.25	NA
	J-28B How often is reteaching provided?	.36	NA
	J-28C How often are students asked questions to check for understanding?	.61	NA

Factor	Chapter 1 Teacher (reading/English/language arts) Questionnaire Item	Year 1992	1993
Teacher-led, Basic-skills Approach	J-28D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.50	NA
	J-28F How often is feedback on student performance specific, referring to students' skills and competencies?	.74	NA
	G-20D Is vocabulary/word meanings part of the teacher's instructional program?	NA	-.14
	G-20P Is learning grammar and vocabulary through writing assignments part of the teacher's instructional program?	NA	.22
Student-centered, Advanced-skills Approach	B-1B Frequency with which teacher uses trade books.	DUP	.04
	B-1C Frequency with which teacher uses teacher-developed materials.	NU	.43
	B-1G Frequency with which teacher uses life skills materials.	DUP	.58
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	NU	.75
	J-23D Frequency with which teacher uses children's newspapers and/or magazines.	-.006	NA
	J-23E Frequency with which teacher uses adult newspapers and magazines.	.10	NA
	J-23F Frequency with which teacher uses language experience stories.	.09	NA
	J-25 Main approach to teaching reading is whole language or language experience approach.	.48	NA
	J-26A Emphasis in class given to fiction.	.20	NA
	J-26B Emphasis in class given to poetry.	.82	NA
	J-26C Emphasis in class given to mythology/folk tales.	.85	NA
	J-26D Emphasis in class given to biography.	.75	NA
	J-26E Emphasis in class given to drama.	.79	NA
	J-26F Emphasis in class given to expository text.	.72	NA
	J-26G Emphasis in class given to other non-fiction.	.71	NA
	J-26U Emphasis in class given to learning to differentiate fact from opinion.	.74	NA
	J-26V Emphasis in class given to learning to draw inferences.	.74	NA
	J-26W Emphasis in class given to learning to read charts and graphs.	.74	NA
	J-26Y Emphasis in class given to learning to use and interpret life skills materials.	.04	NA
	J-26Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.36	NA
	J-26AA Emphasis in class given to developing oral communication skills.	.35	.18
	J-26BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.02	NA
	J-26CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.57	NA
	J-26DD Emphasis in class given to developing students' confidence in their ability to read.	.52	NA

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Factor	Chapter 1-Teacher (reading/English/language arts) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	J-26EE Emphasis in class given to developing students' confidence in their ability to write.	.55	NA
	J-26FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.38	NA
	J-27B How often does the teacher have students do creative writing assignments?	-.09	.61
	J-27C How often does the teacher have students write factual reports?	.12	.44
	J-27D How often does the teacher have students write about something they read?	.18	.65
	J-27H How often does the teacher have students work with one another in pairs or small groups?	.10	.50
	J-27I How often does the teacher have students participate in peer tutoring?	.16	.34
	J-27N How often does the teacher have students give oral presentations or reports?	.03	.42
	J-27O How often does the teacher have students publish their own writing?	.02	.56
	J-27P How often does the teacher have students complete creative projects related to books they read?	.002	.61
	J-28E How often are opportunities provided for skill and knowledge application to real life situations?	.40	NA
	G-20H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.11
	G-20I Is learning to understand the author's intent part of the teacher's instructional program?	NA	-.05
	G-20J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.56
	G-20K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.30
	G-20O Is keeping daily journals part of the teacher's instructional program?	NA	.62
	G-20Q Is learning the writing process part of the teacher's instructional program?	NA	.54

Table 3.11 Instructional Attributes; Chapter 1 Teacher, math; Cohort 1

Factor	Chapter 1 Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.33	NA
	E-3B Student's intellectual ability. (Reversed)	.15	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.22	NA
	E-3E Teacher's use of effective methods of teaching.	.10	NA
	E-3F Teacher's enthusiasm or perseverance.	.25	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.57	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.76	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.81	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.86	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.68	NA
	E-4F I am certain I am making a difference in the lives of my students.	.68	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	.67
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.70
	H-22A Frequency with which teacher uses textbook(s).	.73	NA
	H-22D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.53	NA
	H-22G Frequency with which teacher uses chalkboard.	.55	NA
	H-24A Emphasis in class given to whole numbers/whole number operations.	.08	NU
	H-24C Emphasis in class given to common fractions, decimal fractions, and/or percent.	-.03	.38
	H-24K Emphasis in class given to learning mathematics facts and concepts.	.14	NA
	H-25E How often does teacher have students do mathematics problems from their textbooks?	.85	.74
	H-25F How often does teacher have students complete math workbooks or skill-sheet assignments?	.78	.77
	H-25G How often does teacher have students complete problems on the chalkboard?	.69	.43
	H-25K How often does teacher test students' mastery of the materials and/or skills?	.51	.41
	H-26A How often do students seek clarification about directions?	.44	NA
	H-26B How often is reteaching provided?	.46	NA
	H-26C How often are students asked questions to check for understanding?	.24	NA

Factor	Chapter 1-Teacher (math) Questionnaire Item	Year	
		1992	1993
Teacher-led, Basic-skills Approach	H-26D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.19	NA
	H-26F How often is feedback on student performance specific, referring to students' skills and competencies?	.03	NA
Student-centered, Advanced-skills Approach	B-1C Frequency with which teacher uses teacher-developed materials.	DUP	.43
	B-1F Frequency with which teacher uses manipulative materials.	DUP	.57
	B-1G Frequency with which teacher uses life skills materials.	NU	.25
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.41
	B-1M Frequency with which teacher uses calculators.	NA	.74
	H-22E Frequency with which teacher uses manipulatives.	.28	NA
	H-22F Frequency with which teacher uses teacher-made materials.	.31	NA
	H-22I Frequency with which teacher uses audiovisuals/videos.	.38	NA
	H-22J Frequency with which teacher uses calculators.	.60	NA
	H-24B Emphasis in class given to problem solving.	.66	.44
	H-24D Emphasis in class given to ratio and proportion.	.53	.35
	H-24E Emphasis in class given to measurement and/or tables and graphs.	.71	.48
	H-24F Emphasis in class given to geometry.	.59	.50
	H-24G Emphasis in class given to algebra.	.45	.26
	H-24I Emphasis in class given to probability and statistics.	.46	.45
	H-24L Emphasis in class given to learning skills and procedures needed to solve word problems.	.62	NA
	H-24M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.59	NA
	H-24N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.70	NA
	H-24O Emphasis in class given to learning practical applications of math skills to everyday life.	.82	NA
	H-24P Emphasis in class given to developing an appreciation for the importance of mathematics.	.72	NA
	H-24Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.70	NA
	H-24R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.70	NA
	H-24S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.77	NA
	H-25B How often does the teacher have students work with one another in pairs or small groups?	.45	.66
	H-25C How often does the teacher have students participate in peer tutoring?	.44	.62

Factor	Chapter 1-Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	H-25H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.38	.66
	H-25I How often does the teacher have students use calculators?	.49	.60
	H-26E How often are opportunities provided for skill and knowledge application to real life situations?	.57	NA

Table 3.12 Instructional Attributes; Chapter 1 Teacher, math; Cohort 3

Factor	Chapter 1 Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.08	NA
	E-3B Student's intellectual ability. (Reversed)	.12	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	-.02	NA
	E-3E Teacher's use of effective methods of teaching.	-.02	NA
	E-3F Teacher's enthusiasm or perseverance.	.12	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.65	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.79	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.82	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.84	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.75	NA
	E-4F I am certain I am making a difference in the lives of my students.	.74	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	.76
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.59
	H-22A Frequency with which teacher uses textbook(s).	.68	NA
	H-22D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.58	NA
	H-22G Frequency with which teacher uses chalkboard.	.64	NA
	H-24A Emphasis in class given to whole numbers/whole number operations.	.17	-.09
	H-24C Emphasis in class given to common fractions, decimal fractions, and/or percent.	.12	.01
	H-24K Emphasis in class given to learning mathematics facts and concepts.	.06	NA
	H-25E How often does teacher have students do mathematics problems from their textbooks?	.78	.69
	H-25F How often does teacher have students complete math workbooks or skill-sheet assignments?	.78	.77
	H-25G How often does teacher have students complete problems on the chalkboard?	.77	.27
	H-25K How often does teacher test students' mastery of the materials and/or skills?	.41	.58
	H-26A How often do students seek clarification about directions?	.28	NA
	H-26B How often is reteaching provided?	.49	NA
	H-26C How often are students asked questions to check for understanding?	.30	NA

Factor	Chapter 1 Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher-led, Basic-skills Approach	H-26D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.42	NA
	H-26F How often is feedback on student performance specific, referring to students' skills and competencies?	.17	NA
Student-centered, Advanced-skills Approach	B-1C Frequency with which teacher uses teacher-developed materials.	DUP	.26
	B-1F Frequency with which teacher uses manipulative materials.	DUP	.63
	B-1G Frequency with which teacher uses life skills materials.	NU	.43
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.36
	B-1M Frequency with which teacher uses calculators.	NA	.54
	H-22E Frequency with which teacher uses manipulatives.	.58	NA
	H-22F Frequency with which teacher uses teacher-made materials.	.46	NA
	H-22I Frequency with which teacher uses audiovisuals/videos.	.42	NA
	H-22J Frequency with which teacher uses calculators.	.45	NA
	H-24B Emphasis in class given to problem solving.	.33	NU
	H-24D Emphasis in class given to ratio and proportion.	.43	.25
	H-24E Emphasis in class given to measurement and/or tables and graphs.	.65	.13
	H-24F Emphasis in class given to geometry.	.58	.40
	H-24G Emphasis in class given to algebra.	.27	.36
	H-24I Emphasis in class given to probability and statistics.	.51	.48
	H-24L Emphasis in class given to learning skills and procedures needed to solve word problems.	.55	NA
	H-24M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.51	NA
	H-24N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.55	NA
	H-24O Emphasis in class given to learning practical applications of math skills to everyday life.	.64	NA
	H-24P Emphasis in class given to developing an appreciation for the importance of mathematics.	.65	NA
	H-24Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.17	NA
	H-24R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.37	NA
	H-24S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.62	NA
	H-25B How often does the teacher have students work with one another in pairs or small groups?	.66	.63
	H-25C How often does the teacher have students participate in peer tutoring?	.58	.65

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Factor	Chapter 1-Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	H-25H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.58	.64
	H-25I How often does the teacher have students use calculators?	.53	.58
	H-26E How often are opportunities provided for skill and knowledge application to real life situations?	.57	NA

Table 3.13 Instructional Attributes; Chapter 1 Teacher, math; Cohort 7

Factor	Chapter 1 Teacher (math) Questionnaire Item	Year 1992	Year 1993
Teacher Self-efficacy	When students are successful in achieving intended goals or objectives, it is often attributed to...		
	E-3A Student's home background. (Reversed)	.36	NA
	E-3B Student's intellectual ability. (Reversed)	.30	NA
	E-3D Teacher's attention to the unique interests and abilities of the student.	.53	NA
	E-3E Teacher's use of effective methods of teaching.	.13	NA
	E-3F Teacher's enthusiasm or perseverance.	.27	NA
	E-4A If I try really hard, I can get through even to the most difficult or unmotivated students.	.77	NA
	E-4B I feel that it's part of my responsibility to keep students from dropping out of school.	.79	NA
	E-4C If some students in my class are not doing well, I feel that I should change my approach to the subject.	.83	NA
	E-4D By trying a different teaching method, I can significantly affect a student's achievement.	.72	NA
	E-4E There is really very little I can do to insure that most of my students achieve at a high level. (Reversed)	.48	NA
	E-4F I am certain I am making a difference in the lives of my students.	.71	NA
Teacher-led, Basic-skills Approach	B-1A Frequency with which teacher uses textbooks.	DUP	-.53
	B-1E Frequency with which teacher uses workbooks and practice sheets.	NU	.75
	H-22A Frequency with which teacher uses textbook(s).	-.29	NA
	H-22D Frequency with which teacher uses worksheets and other resource materials provided by the publisher.	.48	NA
	H-22G Frequency with which teacher uses chalkboard.	.35	NA
	H-24A Emphasis in class given to whole numbers/whole number operations.	.41	NU
	H-24C Emphasis in class given to common fractions, decimal fractions, and/or percent.	.12	NU
	H-24K Emphasis in class given to learning mathematics facts and concepts.	.48	NA
	H-25E How often does teacher have students do mathematics problems from their textbooks?	-.35	.30
	H-25F How often does teacher have students complete math workbooks or skill-sheet assignments?	.56	.88
	H-25G How often does teacher have students complete problems on the chalkboard?	.42	.53
	H-25K How often does teacher test students' mastery of the materials and/or skills?	-.03	.00
	H-26A How often do students seek clarification about directions?	.63	NA
	H-26B How often is reteaching provided?	.81	NA
	H-26C How often are students asked questions to check for understanding?	.70	NA

Factor	Chapter 1-Teacher (math) Questionnaire Item	Year	
		1992	1993
Teacher-led, Basic-skills Approach	H-26D How often does the teacher call students up or circulate throughout the classroom for purposes of monitoring students' work and providing individual help?	.56	NA
	H-26F How often is feedback on student performance specific, referring to students' skills and competencies?	.66	NA
Student-centered, Advanced-skills Approach	B-1C Frequency with which teacher uses teacher-developed materials.	DUP	.82
	B-1F Frequency with which teacher uses manipulative materials.	DUP	.79
	B-1G Frequency with which teacher uses life skills materials.	NU	.45
	B-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.50
	B-1M Frequency with which teacher uses calculators.	NA	.32
	H-22E Frequency with which teacher uses manipulatives.	.59	NA
	H-22F Frequency with which teacher uses teacher-made materials.	.42	NA
	H-22I Frequency with which teacher uses audiovisuals/videos.	.50	NA
	H-22J Frequency with which teacher uses calculators.	.56	NA
	H-24B Emphasis in class given to problem solving.	.67	NU
	H-24D Emphasis in class given to ratio and proportion.	.40	.51
	H-24E Emphasis in class given to measurement and/or tables and graphs.	.41	.78
	H-24F Emphasis in class given to geometry.	.19	.53
	H-24G Emphasis in class given to algebra.	.08	.23
	H-24I Emphasis in class given to probability and statistics.	-.34	.41
	H-24L Emphasis in class given to learning skills and procedures needed to solve word problems.	.80	NA
	H-24M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.66	NA
	H-24N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.81	NA
	H-24O Emphasis in class given to learning practical applications of math skills to everyday life.	.76	NA
	H-24P Emphasis in class given to developing an appreciation for the importance of mathematics.	.72	NA
	H-24Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.62	NA
	H-24R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.55	NA
	H-24S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.65	NA
	H-25B How often does the teacher have students work with one another in pairs or small groups?	.17	.58
	H-25C How often does the teacher have students participate in peer tutoring?	.15	.49

Factor	Chapter 1.Teacher (math) Questionnaire Item	Year	
		1992	1993
Student-centered, Advanced-skills Approach	H-25H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.38	.77
	H-25I How often does the teacher have students use calculators?	.47	.38
	H-26E How often are opportunities provided for skill and knowledge application to real life situations?	.70	NA

Appendix D: Factor Loadings for School Composite Variables

Tables 4.4 through 4.19 below display the items representing each composite school factor along with the loadings for each year. Independent results are provided for the: (1) Classroom Teacher Questionnaire; (2) Chapter 1 Teacher Questionnaire; (3) Principal Questionnaire, and; (4) Characteristics of Schools and Programs instrument. Loadings from individual years that are noted as "NA" indicate that the item was not available for that year. Although *Prospects* item numbers changed from year to year, to maintain consistency all questionnaire item numbers noted in the tables are the original 1991 numbers.

Table 4.4 School Structural Attributes; Classroom Teacher; Cohort 1

Factor	Classroom Teacher Questionnaire Item	Year	
		1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.77	.78
	E-6B Determining the content of inservice programs.	.76	.76
	E-6C Setting policy on grouping students in class by ability.	.77	.75
	E-6D Establishing curriculum.	.76	.78
Principal Leadership	E-1F The principal deals effectively with pressures from outside the school that may interfere with my teaching.	.86	.89
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.88	.91
	E-1M This school's administration knows the problems faced by the staff.	.78	.78
Goal Consensus	E-1B Most of colleagues share my beliefs and values about what the central mission of the school should be.	.77	.79
	E-1I Goals and priorities for the school are clear.	.82	.77
	E-1S Staff members maintain high standards.	.82	.86

Table 4.5 School Organizational Attributes; Classroom Teacher; Cohort 1

Factor	Classroom Teacher Questionnaire Item	Year	
		1992	1993
Consulting Other Staff about Evaluating Student Progress	A-12A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.75	.76
	A-12B When evaluating students' academic progress how frequently do you consult or use information from aides?	.82	.77
	A-12C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	.76	.80
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.81	.81
	E-1Q Teachers in this school are continually learning and seeking new ideas.	.71	.74
	E-1W The principal is interested in innovation and new ideas.	.87	.87
Staff Collegiality	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.69	.71
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.76	.75
	E-1R There is a great deal of cooperative effort among staff members.	.79	.77
Inservice Opportunities	F-17 During the last 12 months, what is the total amount of time you have spent on in-service education?	.68	.70
	F-18 What type(s) of support have you received in the last 12 months for in-service education?	.68	.74
	F-20 Do you have input in determining in-service topics?	.54	.47
	F-21 Overall, to what extent has the in-service program helped you improve instruction?	.76	.74
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.83	.84
	E-7C How would you characterize your school's relationship with the school board or governing board?	.83	.84

Table 4.6 School Structural Attributes; Classroom Teacher; Cohort 3

Factor	Classroom Teacher Questionnaire Item	Year		
		1991	1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.66	.78	.79
	E-6B Determining the content of inservice programs.	.73	.78	.77
	E-6C Setting policy on grouping students in class by ability.	.77	.74	.79
	E-6D Establishing curriculum.	.67	.79	.80
	E-1Y The principal usually consults with staff members before s/he makes decisions that affect us.	.76	NA	NA
Principal Leadership	E-1E The principal does a poor job of getting resources for this school. (Reversed)	.68	NA	NA
	E-1F The principal deals effectively with pressures from outside the school that might interfere with my teaching.	.74	.89	.90
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.82	.90	.90
	E-1L The principal knows what kind of school s/he wants and has communicated it to the staff.	.85	NA	NA
	E-1M This school's administration knows the problems faced by the staff.	.71	.80	.79
	E-1U The principal lets staff members know what is expected of them.	.85	NA	NA
Goal Consensus	E-1B Most of my colleagues share my beliefs and values about what the central mission of the school should be.	.84	.80	.80
	E-1I Goals and priorities for the school are clear.	.73	.80	.80
	E-1S Staff members maintain high standards.	.83	.87	.85

Table 4.7 School Organizational Attributes; Classroom Teacher; Cohort 3

Factor	Classroom Teacher Questionnaire Item	Year		
		1991	1992	1993
Consulting Other Staff about Evaluating Student Progress	A-12A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.81	.79	.79
	A-12B When evaluating students' academic progress how frequently do you consult or use information from aides?	.74	.82	.81
	A-12C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	.77	.75	.73
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.82	.84	.84
	E-1Q Teachers in this school are continually learning and seeking new ideas.	.70	.75	.75
	E-1W The principal is interested in innovation and new ideas.	.83	.86	.87
Staff Collegiality	E-1A Most staff members in this school can be counted on to help out anywhere, anytime - even though it may not be part of their official assignment.	.76	NA	NA
	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.54	.73	.68
	E-1K Staff members are recognized for a job well done.	.71	NA	NA
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.76	.78	.80
	E-1R There is a great deal of cooperative effort among staff members.	.80	.80	.80
Inservice Opportunities	F-17 During the last 12 months, what is the total amount of time you have spent on in-service education?	.66	.72	.70
	F-18 What type(s) of support have you received in the last 12 months for in-service education?	.73	.72	.71
	F-20 Do you have input in determining in-service topics?	.42	.40	.57
	F-21 Overall, to what extent has the in-service program helped you improve instruction?	.77	.77	.77
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.84	.83	.84
	E-7C How would you characterize your school's relationship with the school board or governing board?	.84	.83	.84

Table 4.8 School Structural Attributes; Classroom Teacher; Cohort 7

Factor	Classroom Teacher Questionnaire Item	Year		
		1991	1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.75	.82	.79
	E-6B Determining the content of inservice programs.	.74	.81	.76
	E-6C Setting policy on grouping students in class by ability.	.67	.80	.74
	E-6D Establishing curriculum.	.71	.80	.77
	E-1Y The principal usually consults with staff members before s/he makes decisions that affect us.	.72	NA	NA
Principal Leadership	E-1E The principal does a poor job of getting resources for this school. (Reversed)	.67	NA	NA
	E-1F The principal deals effectively with pressures from outside the school that might interfere with my teaching.	.71	.90	.89
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.81	.91	.90
	E-1L The principal knows what kind of school s/he wants and has communicated it to the staff.	.86	NA	NA
	E-1M This school's administration knows the problems faced by the staff.	.75	.79	.77
	E-1U The principal lets staff members know what is expected of them.	.87	NA	NA
Goal Consensus	E-1B Most of my colleagues share my beliefs and values about what the central mission of the school should be.	.83	.82	.80
	E-1I Goals and priorities for the school are clear.	.75	.78	.79
	E-1S Staff members maintain high standards.	.85	.84	.81

Table 4.9 School Organizational Attributes; Classroom Teacher; Cohort 7

Factor	Classroom Teacher Questionnaire Item	Year		
		1991	1992	1993
Consulting Other Staff about Evaluating Student Progress	A-12A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.84	.83	.81
	A-12B When evaluating students' academic progress how frequently do you consult or use information from aides?	.74	.75	.83
	A-12C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	.83	.81	.84
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.81	.84	.82
	E-1Q Teachers in this school are continually learning and seeking new ideas.	.75	.78	.74
	E-1W The principal is interested in innovation and new ideas.	.83	.86	.86
Staff Collegiality	E-1A Most staff members in this school can be counted on to help out anywhere, anytime - even though it may not be part of their official assignment.	.73	NA	NA
	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.60	.73	.73
	E-1K Staff members are recognized for a job well done.	.74	NA	NA
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.75	.78	.77
	E-1R There is a great deal of cooperative effort among staff members.	.79	.81	.78
Inservice Opportunities	F-17 During the last 12 months, what is the total amount of time you have spent on in-service education?	.66	.66	.67
	F-18 What type(s) of support have you received in the last 12 months for in-service education?	.73	.72	.73
	F-20 Do you have input in determining in-service topics?	.42	.53	.56
	F-21 Overall, to what extent has the in-service program helped you improve instruction?	.77	.76	.77
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.84	.84	.85
	E-7C How would you characterize your school's relationship with the school board or governing board?	.84	.84	.85

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Table 4.10 School Structural Attributes; Chapter 1 Teacher; Cohort 1

Factor	Chapter 1 Teacher Questionnaire Item	Year	
		1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.83	.79
	E-6B Determining the content of inservice programs.	.87	.83
	E-6C Setting policy on grouping students in class by ability.	.72	.75
	E-6D Establishing curriculum.	.80	.84
Principal Leadership	E-1F The principal deals effectively with pressures from outside the school that may interfere with my teaching.	.91	.91
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.92	.86
	E-1M This school's administration knows the problems faced by the staff.	.77	.83
Goal Consensus	E-1B Most of colleagues share my beliefs and values about what the central mission of the school should be.	.73	.83
	E-1I Goals and priorities for the school are clear.	.82	.81
	E-1S Staff members maintain high standards.	.82	.88

Table 4.11 School Organizational Attributes; Chapter 1 Teacher; Cohort 1

Factor	Chapter 1 Teacher Questionnaire Item	Year	
		1992	1993
Consulting Other Staff about Evaluating Student Progress	A-14A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.61	.56
	A-14B When evaluating students' academic progress how frequently do you consult or use information from aides?	.80	.75
	A-14C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	.72	.81
Coordination of Chapter 1 with Other School Services	D-3A Frequency that Chapter 1 & regular classroom staff consult in the development of written lesson plans for Chapter 1 participants.	.70	.71
	D-3B Frequency of meetings and/or conferences between Chapter 1 and regular classroom staff are held to discuss instructional coordination.	.80	.82
	D-3C Frequency of Chapter 1 and regular classroom staff informal discussions.	.78	.73
	D-3E Frequency of common planning periods provided to regular and Chapter 1 staff.	.55	.58
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.83	.84
	E-1Q Teachers in this school are continually learning and seeking new ideas.	.73	.79
	E-1W The principal is interested in innovation and new ideas.	.87	.88
Staff Collegiality	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.64	.80
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.81	.70
	E-1R There is a great deal of cooperative effort among staff members.	.78	.84
Inservice Opportunities	F-18 During the last 12 months, what is the total amount of time you have spent on in-service education?	.75	.64
	F-19 What type(s) of support have you received in the last 12 months for in-service education?	.67	.64
	F-21 Do you have input in determining in-service topics?	.60	.65
	F-22 Overall, to what extent has the in-service program helped you improve instruction?	.79	.77
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.89	.83
	E-7C How would you characterize your school's relationship with the school board or governing board?	.89	.83

Table 4.12 School Structural Attributes; Chapter 1 Teacher; Cohort 3

Factor	Chapter 1 Teacher Questionnaire Item	Year		
		1991	1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.80	.77	.78
	E-6B Determining the content of inservice programs.	.71	.81	.80
	E-6C Setting policy on grouping students in class by ability.	.60	.79	.79
	E-6D Establishing curriculum.	.70	.72	.79
	E-1Y The principal usually consults with staff members before s/he makes decisions that affect us.	.68	NA	NA
Principal Leadership	E-1E The principal does a poor job of getting resources for this school. (Reversed)	.62	NA	NA
	E-1F The principal deals effectively with pressures from outside the school that might interfere with my teaching.	.65	.90	.91
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.88	.92	.91
	E-1L The principal knows what kind of school s/he wants and has communicated it to the staff.	.89	NA	NA
	E-1M This school's administration knows the problems faced by the staff.	.76	.78	.84
	E-1U The principal lets staff members know what is expected of them.	.82	NA	NA
Goal Consensus	E-1B Most of my colleagues share my beliefs and values about what the central mission of the school should be.	.85	.82	.86
	E-1I Goals and priorities for the school are clear.	.82	.84	.82
	E-1S Staff members maintain high standards.	.92	.86	.87

Table 4.13 School Organizational Attributes; Chapter 1 Teacher; Cohort 3

Factor	Chapter 1 Teacher Questionnaire Item	Year		
		1991	1992	1993
Consulting Other Staff about Evaluating Student Progress	A-14A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.80	.59	.42
	A-14B When evaluating students' academic progress how frequently do you consult or use information from aides?	.77	.72	.56
	A-14C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	-.10	.70	.86
Coordination of Chapter 1 with Other School Services	D-3A Frequency that Chapter 1 & regular classroom staff consult in the development of written lesson plans for Chapter 1 participants.	.69	.74	.76
	D-3B Frequency of meetings and/or conferences between Chapter 1 and regular classroom staff are held to discuss instructional coordination.	.79	.81	.82
	D-3C Frequency of Chapter 1 and regular classroom staff informal discussions.	.56	.69	.58
	D-3E Frequency of common planning periods provided to regular and Chapter 1 staff.	.58	.54	.53
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.79	.84	.85
	E-1Q Teachers in this school are continuallly learning and seeking new ideas.	.69	.77	.75
	E-1W The principal is interested in innovaition and new ideas.	.82	.90	.91
Staff Collegiality	E-1A Most staff members in this school cain be counted on to help out anywhere, anytime - even though it may not be part of their official assignment.	.80	NA	NA
	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.59	.74	.76
	E-1K Staff members are recognized for a jjob well done.	.83	NA	NA
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.79	.82	.76
	E-1R There is a great deal of cooperative effort among staff members.	.88	.83	.82
Inservice Opportunities	F-18 During the last 12 months, what is the total amount of time you have spent on in-service education?	.65	.81	.72
	F-19 What type(s) of support have you received in the last 12 months for in-service education?	.82	.59	.78
	F-21 Do you have input in determining in--service topics?	.23	.42	.61
	F-22 Overall, to what extent has the in-service program helped you improve instruction?	.77	.78	.82
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.83	.84	.85
	E-7C How would you characterize your school's relationship with the school board or governing board?	.83	.84	.85

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Table 4.14 School Structural Attributes; Chapter 1 Teacher; Cohort 7

Factor	Chapter 1 Teacher Questionnaire Item	Year		
		1991	1992	1993
Staff Influence on School Policy	E-6A Determining discipline policy.	.82	.84	.67
	E-6B Determining the content of inservice programs.	.74	.81	.83
	E-6C Setting policy on grouping students in class by ability.	.82	.60	.82
	E-6D Establishing curriculum.	.53	.70	.81
	E-1Y The principal usually consults with staff members before s/he makes decisions that affect us.	.66	NA	NA
Principal Leadership	E-1E The principal does a poor job of getting resources for this school. (Reversed)	.78	NA	NA
	E-1F The principal deals effectively with pressures from outside the school that might interfere with my teaching.	.70	.94	.93
	E-1G The principal sets priorities, makes plans, and sees that they are carried out.	.94	.92	.95
	E-1L The principal knows what kind of school s/he wants and has communicated it to the staff.	.91	NA	NA
	E-1M This school's administration knows the problems faced by the staff.	.93	.71	.82
	E-1U The principal lets staff members know what is expected of them.	.89	NA	NA
Goal Consensus	E-1B Most of my colleagues share my beliefs and values about what the central mission of the school should be.	.88	.76	.87
	E-1I Goals and priorities for the school are clear.	.82	.85	.95
	E-1S Staff members maintain high standards.	.92	.82	.88

Table 4.15 School Organizational Attributes; Chapter 1 Teacher; Cohort 7

Factor	Chapter 1 Teacher Questionnaire Item	Year		
		1991	1992	1993
Consulting Other Staff about Evaluating Student Progress	A-14A When evaluating students' academic progress how frequently do you consult or use information from other classroom teachers?	.85	.88	.77
	A-14B When evaluating students' academic progress how frequently do you consult or use information from aides?	.80	.43	.71
	A-14C When evaluating students' academic progress how frequently do you consult or use information from compensatory education or remedial teachers?	.86	.85	.82
Coordination of Chapter 1 with Other School Services	D-3A Frequency that Chapter 1 & regular classroom staff consult in the development of written lesson plans for Chapter 1 participants.	.85	.85	.87
	D-3B Frequency of meetings and/or conferences between Chapter 1 and regular classroom staff are held to discuss instructional coordination.	.87	.91	.88
	D-3C Frequency of Chapter 1 and regular classroom staff informal discussions.	.70	.84	.85
	D-3E Frequency of common planning periods provided to regular and Chapter 1 staff.	.59	.59	.64
Support for Innovation	E-1N In this school I am encouraged to experiment with my teaching.	.89	.73	.73
	E-1Q Teachers in this school are continually learning and seeking new ideas.	.55	.69	.86
	E-1W The principal is interested in innovation and new ideas.	.90	.92	.89
Staff Collegiality	E-1A Most staff members in this school can be counted on to help out anywhere, anytime - even though it may not be part of their official assignment.	.81	NA	NA
	E-1J The staff seldom evaluates its programs and activities. (Reversed)	.80	.77	.53
	E-1K Staff members are recognized for a job well done.	.63	NA	NA
	E-1P The school administration's behavior toward the staff is supportive and encouraging.	.51	.81	.88
	E-1R There is a great deal of cooperative effort among staff members.	.75	.89	.88
Inservice Opportunities	F-18 During the last 12 months, what is the total amount of time you have spent on in-service education?	.75	.69	.62
	F-19 What type(s) of support have you received in the last 12 months for in-service education?	.59	.72	.63
	F-21 Do you have input in determining in-service topics?	.72	.68	.62
	F-22 Overall, to what extent has the in-service program helped you improve instruction?	.74	.80	.75
School Relationship with Community	E-7A How would you characterize your school's relationship with parents?	.93	.84	.87
	E-7C How would you characterize your school's relationship with the school board or governing board?	..93	.84	.87

Table 4.16 School Structural Attributes; Principal; Cohorts 1, 3, & 7

Factor	Principal Questionnaire Item	Year		
		1991	1992	1993
Extent of School Decision-making	Are decisions made at the school-level concerning:			
	8A Student promotion/retention policies	.44	.39	.52
	8B How to assess staff performance	.66	.31	.62
	8C Use of school funds for instructional equipment, supplies, & computers	.26	.37	.25
	8D Text & materials used in class	.65	.63	.57
	8E Selecting methods for student assessment	.63	.68	.62
	8F Selecting students for special or remedial services	.54	.55	.52
	8G Selecting teachers to provide special or remedial services	.55	.54	.54
	8H Determining if students will be grouped	.40	.54	.38
School Decision-making Collaboration	Extent to which teachers and the principal share in decision-making concerning:			
	8A Student promotion/retention policies	.20	.47	.44
	8B How to assess staff performance	.14	.26	.09
	8C Use of school funds for instructional equipment, supplies, & computers	.45	.66	.62
	8D Text & materials used in class	.70	.57	.65
	8E Selecting methods for student assessment	.54	.51	.56
	8F Selecting students for special or remedial services	.70	.53	.56
	8G Selecting teachers to provide special or remedial services	.36	.51	.54
	8H Determining if students will be grouped	.41	.45	.55
Staff Stability	14A Staff absenteeism	.64	.71	.68
	14B Staff turnover	.53	.37	.50
	14C Staff relations with students	.80	.79	.76
	14D Staff satisfaction with their jobs	.71	.76	.75

Factor	Principal Questionnaire Item	Year		
		1991	1992	1993
Planning Academic Programs	10A Frequency of principal meeting with members of educational administrative staff to identify program needs	.58	.41	.58
	10B Frequency of principal meeting with teachers on program plans/procedure	.62	.67	.69
	10C Frequency of principal meeting with Chapter 1 teachers on education program plans/procedures	.79	.80	.77
	10D Frequency of principal meeting with other compensatory teachers on compensatory program plans/procedures	.73	.73	.76
	10E Frequency of principal meeting with classroom teachers to discuss individual students' academic needs	.56	.64	.64
	10F Frequency of principal meeting with Chapter 1 teachers to discuss individual students' academic needs	.75	.78	.75
	10G Frequency of principal meeting with parents to discuss school policy or curriculum	.46	.63	.58

Table 4.17 School Organizational Attributes; Principal; Cohorts 1, 3, & 7

Factor	Principal Questionnaire Item	Year		
		1991	1992	1993
Parent Involvement at School	34A Meetings of the PTA	.63	.65	.54
	34B Other informal parent-teacher contacts	.65	.55	.60
	34C Meetings of the parent advisory organization for special programs	.66	.68	.61
	34D Advising on the design of special programs	.62	.68	.62
	34E Participating in policy decisions	.72	.72	.59
	34F Evaluating the overall instructional program	.66	.68	.60
	34G Monitoring teachers	.52	.35	.35
	34H Serving as volunteers in the classroom	.66	.58	.62
	34I Serving as volunteers in after school programs	.52	.45	.55
	34J Serving as volunteers outside the classroom	.68	.58	.62
	34K Working as paid instructional aides	.34	.24	.38
	34L Fund raising and other support activities	.60	.57	.52
	34M Helping the students with schoolwork at home	.61	.55	.54
School Relationship with Community	9B The community served by this school is supportive of its goals & activities	.88	.89	.88
	9E Parents are actively involved in this school's programs	.88	.89	.88

Table 4.18 School Compositional Attributes; Principal; Cohorts 1, 3, & 7

Factor	Chapter 1 Teacher Questionnaire Item	Year		
		1991	1992	1993
Disciplinary Problems	48A Tardiness	.58	.48	.56
	48B Absenteeism	.60	.52	.58
	48C Class cutting	.63	.60	.69
	48D Physical conflicts among students	.64	.61	.54
	48E Gang activities	.51	.52	.60
	48F Robbery or theft	.71	.64	.69
	48G Vandalism	.65	.60	.63
	48L Use of alcohol	.61	.56	.70
	48M Use of illegal drugs	.65	.69	.75
	48N Use of legal drugs	.62	.56	.66
	48O Possessions of weapons	.66	.61	.72
	48P Physical abuse of teachers	.46	.52	.52
	48Q Verbal abuse of teachers	.73	.73	.68
	48R Students' verbal abuse of each other	.70	.69	.64
	48S Racial/Ethnic conflict among students	.46	.56	.58

Table 4.19 School Organizational Attributes; Characteristics of Schools and Programs; Cohorts 1, 3, & 7

Factor	Characteristics of Schools and Programs Item	Year		
		1991	1992	1993
Coordination of Materials (Reading/English/ Language Arts)	D-17 In general, do the Chapter 1 teachers use the same curriculum materials as the regular classroom teachers? (Reading)	.99	.96	.99
	D-17 In general, do the Chapter 1 teachers use the same curriculum materials as the regular classroom teachers? (English/Language Arts)	.99	.96	.99